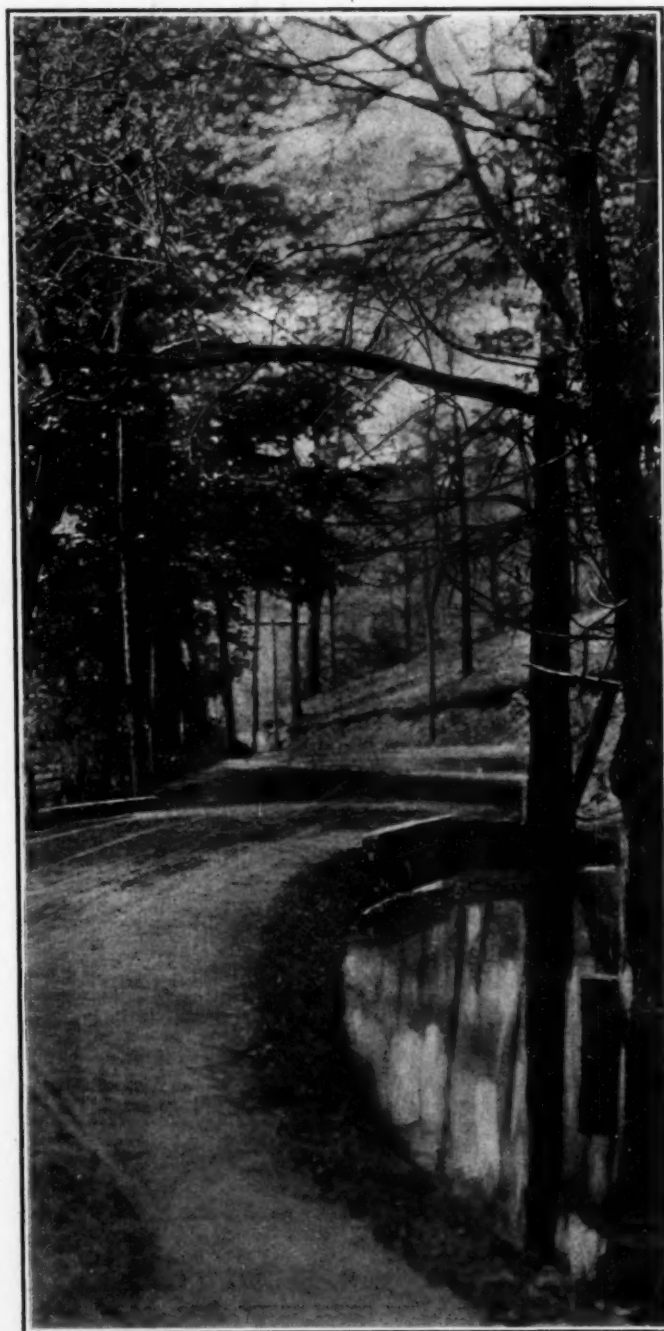


THE AUTOMOBILE

Enjoying the National Holiday



TO HIM WHO IN THE LOVE OF NATURE HOLDS COMMUNION WITH HER VISIBLE FORMS, SHE SPEAKS A VARIOUS LANGUAGE.—William Cullen Bryant

Suggested 3- or 4-Day Trips for The Automobilst's Fourth of July Vacation

THIS year the first week in July offers one of the best of opportunities for a week-end vacation, the national holiday coming on Thursday, permitting of a four-day outing and getting back to the office again Monday morning.

It was with this thought in mind that THE AUTOMOBILE decided to outline on the following pages a varied series of holiday trips from such population centers as New York, Boston, Philadelphia, Chicago, Washington, Pittsburgh, Minneapolis and St. Paul, Denver, New Orleans and other points. The idea has been to aid in the selection of a 3- to 4-day trip from any one of these places. From each an option of three or four trips is afforded. The trips are outlined and skeleton maps are reproduced to give a clearer idea of the territory covered by each, the different lines indicating the varieties of the routes.

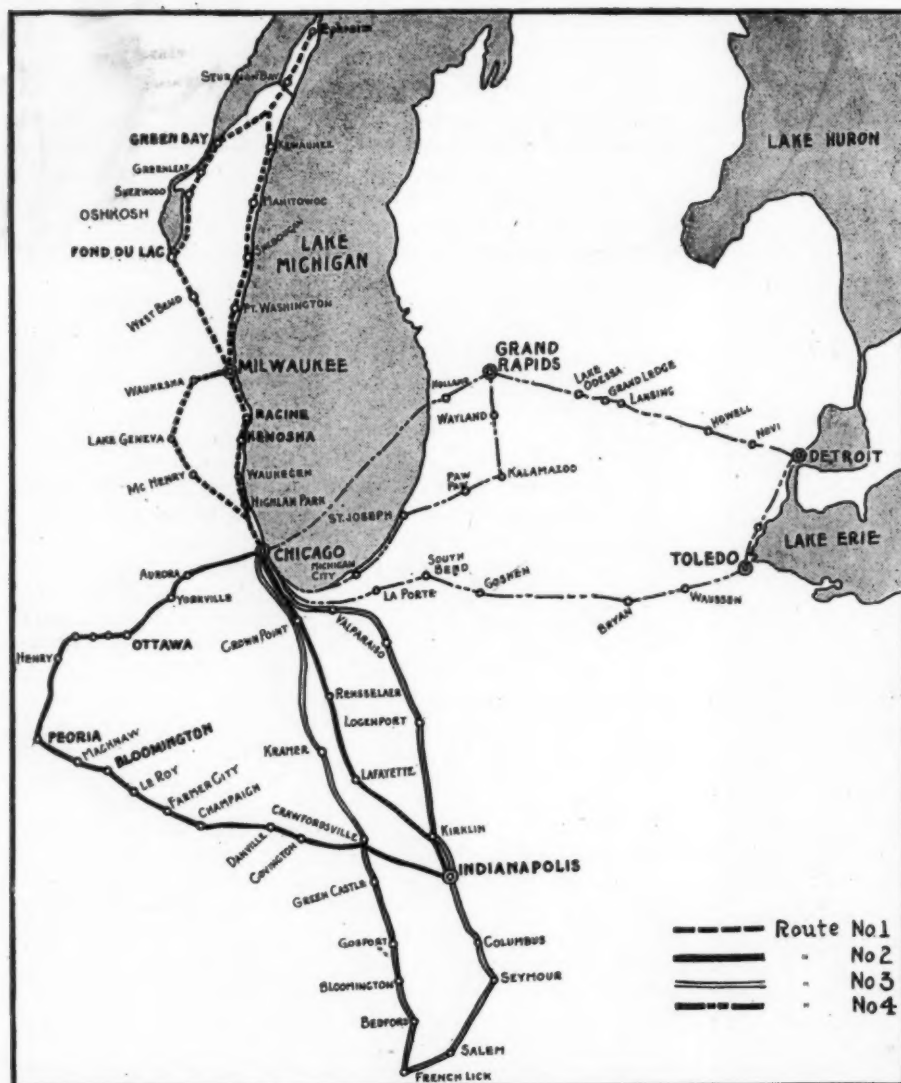
In the text is given a brief outline of each trip, the mileage, some of the points of scenic interest and also some of the places of historical significance along the route. The tourist can secure guide books covering practically all of these trips, these books giving detailed route directions which obviate the old-time necessity of stopping at every turn or cross road to ask the oldest inhabitant whether to turn to the left, to the right or not to turn at all. Since the advent of the reliable tour book which gives minute directions as to best routes to follow, the tourist does not have to rely upon the doubtful judgment of the local liveryman to point out to him the correct road to follow.

These days of blind touring are now past; the art of route making and route describing has been developed as never before and today the tourist can travel from ocean to ocean without stopping to consult with natives of any community as to what course to follow. The driver receives his route instructions from the occupant of the other half of the front seat, who in turn gets them from the open tour book in his lap. This leather-bound volume in fact contains more valuable road information between its two covers than could be vouchsafed by a whole army of village oracles or oldest settlers.

When the opportunity for the week-end tour arrives, almost the first question asked is, "Where shall we go?" Anticipating this, the following pages are made up of answers to the question. There are scenic trips, historical trips, mountain trips. In fact, this issue contains a sort of auxiliary guide book—a supplement to the touring guide. THE AUTOMOBILE suggests the trip, the tour book backs it up with minute directions as to the route and the condition of the roads. The combination should prove valuable to the man with an automobile who lives in any one of the several touring-centers covered.

Four 4-Day Trips Out of Chicago

Routes Suggested to Green Bay and Ephraim, Wis.,
Grand Rapids and Detroit, Mich., Toledo, O.,
French Lick, Ind., and Other Places



Chicago has short tours into Ohio, Michigan, Illinois, Indiana and Wisconsin

CHICAGO, ILL., June 17—In view of the opportunity offered for 4-day trips between July 4 and 8 the following suggestions have been made for attractive routes out of Chicago. In each case some particularly attractive features of the section has been selected as the objective point for the trip.

In Trip No. 1 a visit to the new State Park overlooking Green Bay, Wis., on the peninsula north of Sturgeon Bay, is suggested.

In laying out the Trip No. 2 the initial idea was to offer an opportunity of visiting the new State Park at Starved Rock, just west of Ottawa, Ill., about half of this trip being in Illinois and the latter half in Indiana.

In planning the third trip the idea has been to take the tourist into the beautiful hilly country in southern Indiana, and those who have a little more time than the allowance of 4 days will find it well worth their while to spend at least an extra day in taking some of the attractive trips offered in the vicinity of French Lick, Ind.

Trip No. 4 offers an opportunity of taking in some of the

better-known resort sections of southern Michigan, although Detroit has been selected as the objective point.

The complete running directions for all these trips can be found in the 1912 edition of Vol. 4 of the *Automobile Blue Book*.

Trip No. 1 has been laid out with the end in view of taking advantage of the gravel roads in eastern Wisconsin and at the same time touch the better-known resorts in this section. Ephraim, north of Sturgeon Bay, almost at the end of the peninsula, has been selected as the objective point not only because of the general good condition of the roads, but on account of its being located in a particularly attractive section of the state adjoining the new State Park. Very few automobilists have made the trip into Door County, but those who have remember the time they spent there with considerable pleasure.

It is suggested that the first day's run be to go up the shore route as far as Highland Park, then go west to Half Day and north on what is called the inside route to Milwaukee, making the morning run approximately 90 miles. In the afternoon the run to Fond du Lac is easily made in 3 hours, and an early stop is advised here so that some time can be spent on a short trip along the west shore of Lake Winnebago.

The next day's run has been laid out with Green Bay as the noon stop, or if desired the run clear through to Sturgeon Bay, approximately 125 miles from Fond du Lac, might be made with an early start. The short trip of 30 miles to Ephraim can be made in 1 1-2 hours, giving almost the whole afternoon and evening to visit some of the attractive spots around Ephraim.

Returning, the route follows the shore road all the way to Milwaukee, through Manitowoc and Sheboygan, making the third day's run about 175 miles. The last day, instead of coming directly to Chicago, it is suggested that the detour *via* Lake Geneva be made, making the day's run about 130 miles.

Concerning Trip No. 2, now that the state has been so fortunate as to procure the properties adjoining the famous Starved Rock section for a state reserve, this attractive but hitherto little known spot is becoming the Mecca for tourists surrounding Chicago. It is easily the most attractive, scenically, of any similar section in the whole state and limited space would not allow the depicting of the many interesting features to be seen surrounding this historical spot. It is suggested that the run to Ottawa be made in the morning, leaving practically the whole afternoon for sight-seeing in the park. This would allow of an early start the next morning on the run to Peoria, as a noon stop on the second day's run. This is about 90 miles from Ottawa. The afternoon run of 94 miles to Champaign can easily be made by 6 o'clock. Up to this point the road conditions, particularly after leaving Ottawa, have been largely on the natural dirt soil of Illinois. However, during the summer months in dry weather they are not as bad as sometimes pictured. Soon after leaving Champaign the tourist comes onto gravel roads, which are fol-

lowed to Indianapolis, completing the third day's run of 130 miles, purposely made short on account of the many interesting things to be seen in the vicinity of the Hoosier metropolis.

On the fourth day the run of approximately 200 miles to Chicago, although the longest of the four, is not a particularly hard one and most people find that it can easily be made in 10 or 11 hours.

As stated above, the primary idea in planning Trip No. 3 has been to give the motorist an idea of the excellent touring possibilities in southern Indiana. On account of the distance from Chicago and the comparatively short time allowed, the route is laid out to go direct to Crawfordsville, 173 miles, on the first day's run, and it is suggested that the resort of Kramer be selected as the noon stop.

On the second day the route is direct to French Lick *via* Bloomington and Bedford, with the noon stop at the former. The tourist should arrive in French Lick early enough in the afternoon to give plenty of time to enjoy many of the attractive features to be found there.

On the third day Indianapolis has been selected as the night stop, making another short day's run of 131 miles, which can easily be made between 10 in the morning and 6 o'clock at night. If it is desired to make the third day's run a little longer in order to finish on the fourth day earlier it is possible to continue on from Indianapolis to Logansport as the night stop.

If the start from Indianapolis is made on the morning of the fourth day it should be an early one in order to have no difficulty in covering the 200-mile run to Chicago. This run into Chicago is not over what is known as the most frequented Indianapolis-Chicago route, but the mileage is only slightly longer and offers some features not found on the regular route to Lafayette. Roads as far as Knox are excellent and, although shortly after leaving Knox, some rather soft, sandy dirt is encountered for a few miles, it is not serious and entering Valparaiso hard roads are encountered again and followed all the way into Chicago.

The main idea of Trip No. 4 has been to offer tourists an opportunity to see some of the resort section in southern Michigan

and at the same time give a few hours in Detroit in order to allow the stranger an opportunity of seeing the wonderful progress of automobile manufacturing in that city, also the excellent work done by the city on the boulevard system. Although Detroit now claims a population of nearly 500,000, no city in the country has finer opportunities for outdoor sports, particularly on the water. The first day's run has been laid out to Bryan, O., about 201 miles, with South Bend as the noon stop. Although this may seem rather long, road conditions are generally excellent and good time can be made all the way.

The second day the run of 122 miles *via* Toledo can easily be made by 2 or 3 o'clock in the afternoon, allowing sufficient time for an extended trip on the boulevard system in Detroit.

The third day's run of approximately 150 miles to Grand Rapids is also an easy one, for although the distance is slightly longer than the second day's run, the road is almost straight, with surprisingly good gravel most of the way. The noon stop should be made at Lansing.

The fourth day's run is the longest of the whole trip, but with an early start Chicago should be reached by 7 o'clock in the evening. St. Joseph has been selected as the noon stop, where the excellent accommodations of the Edgewater Club may tempt many tourists to stop over night and make the early run into Chicago on Monday morning.

An additional suggestion for those who may possibly be able to spend 5 or 6 days on the trip at this time is to follow Trip No. 3 to either French Lick or Bedford, Ind., and from either one of these points go to Louisville. The trip from Bedford to Louisville direct is especially recommended for those who are not afraid of a few hills in order to take in some exceptionally fine scenery through a wooded country practically all the way. From Louisville another day's run can be made to Frankfort, then south to Harrodsburg, Ky., and north into Lexington, offering an excellent opportunity to see the beautiful country bordering on the Kentucky River, every mile of the road being over excellent macadam. Another day's run of 155 miles could be made from Lexington to Richmond, Ind., *via* Cincinnati, then to Fort Wayne and into Chicago *via* South Bend.

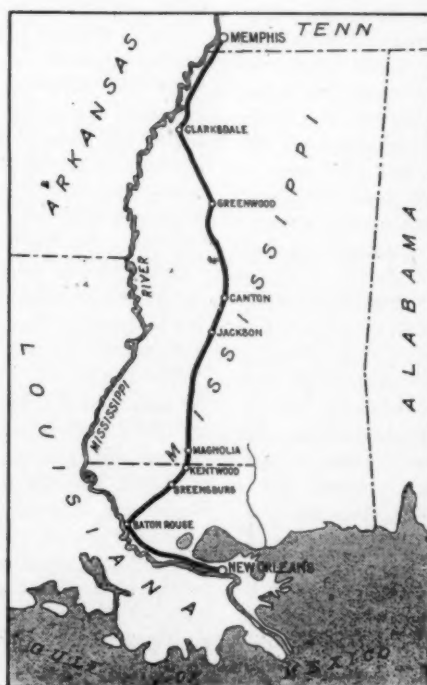
In New Orleans

NEW ORLEANS, LA., June 17—Topographical conditions limit tours from New Orleans to two general routes. One leads north to Memphis touching Baton Rouge and a number of small towns in Louisiana and Greensburg, Kentwood, Magnolia, Jackson, Canton, Greenwood, Clarksdale and Tunica, in addition to many other important towns in Mississippi.

The other route lies through Donaldsonville to Houma and to Morgan City, thence westward along the line of the Southern Pacific through New Iberia, Lafayette, Jennings, Lake Charles and other Louisiana towns into Texas, where higher ground soon lends itself to the excellent system of roads which extends toward all important Texas cities.

While the Memphis tour has been most popular with New Orleans tourists, road conditions on each route are practically the same. The tour westward across Louisiana is considered the more scenic, but large towns are fewer and it is more difficult to find gasoline and supplies.

The picturesque trip through the Land



One of New Orleans' two general touring routes. This one leads to Memphis by way of Baton Rouge and Jackson, Miss.

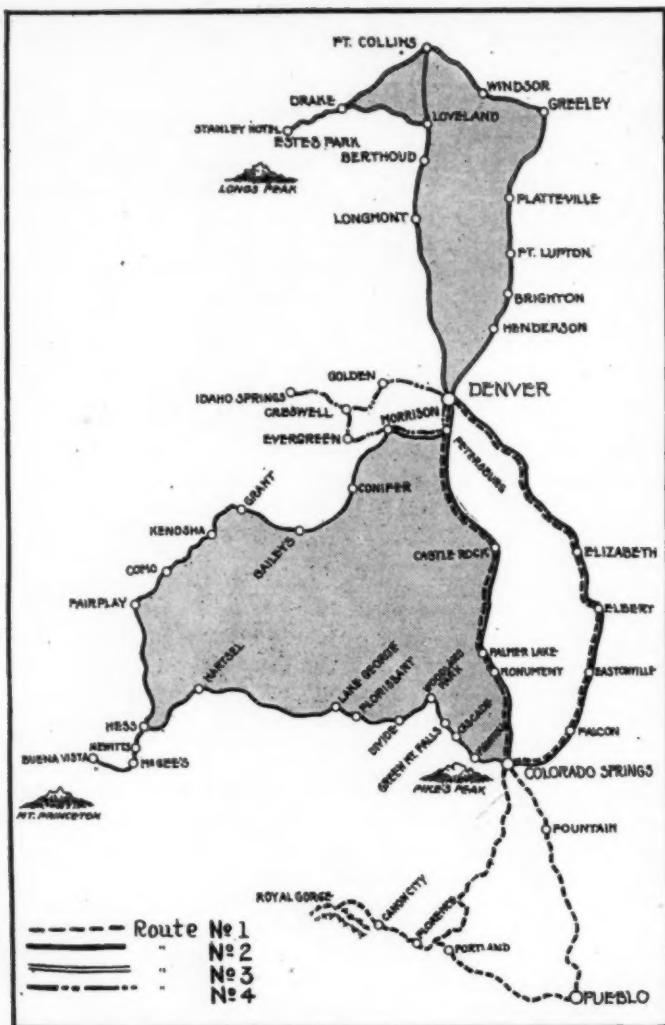
Field Is Limited

of Evangeline, however, is growing in favor and will be more extensively toured this year than ever before. Road improvements are increasing, and this year greater facilities for repair work have been added to the garages along this route.

In starting from New Orleans it is necessary to take a roundabout course before the main road west is reached. The road toward Baton Rouge is followed to Donaldsonville, when it is necessary to strike south to Houma, a distance of 40 miles. The direction then is changed from due south to northwest to Morgan City, where the Southern Pacific is encountered.

At the points indicated in the accompanying sketches gasoline and practically all of the necessary supplies may be obtained. Especially well-equipped garages are found at Lake Charles and Lafayette. Hotels at the towns shown are splendid and the excellence of their cuisine is one of the features of this trip.

As more automobiles are owned along the northern route to Memphis, there is



Showing four short tours in the vicinity of Denver, Col.

more initiative on the part of local clubs in organizing tours. These are joined by many New Orleans motorists. The country is thickly settled and the tours are frequent. Good hotels and fairly well-equipped garages can be found at intervals of a few miles.

On either of these tours the average daily mileage will not exceed 130 miles, unless extra efforts are made to increase it. This distance can be covered comfortably each day.

On the northern tour, Baton Rouge, the state capital, is 117.7 miles from New Orleans. Here all conveniences are to be had. The route along the river is picturesque and the city of Baton Rouge is of great interest to the newcomer. Fifty-three miles north of Baton Rouge is Greensburg, a small city of much interest. Kentwood is another pretty place, 18 miles farther north, while Magnolia, across the line in Mississippi, 25 miles away, generally is used as a stopping place for the night on either the going or returning trip. Eighty-six miles north is Jackson, the capital of Mississippi, and a city supporting many motor cars. Twenty-seven miles separate Jackson and Canton. Greenwood is 87 miles north; Clarksdale is 83 miles farther on; Memphis is 92 miles north of Clarksdale.

From each of these trunk lines short side trips can be taken from many points. Often these branch roads are found to be even better than the main routes. In many cases they lead to plantations where the most delightful hospitality is dispensed.

The spin from New Orleans to Chef Menteur, 30 miles, is made nearly every day by hundreds of motorists, some of whom arrange to be ferried at the Rigolets and proceed along the Gulf Coast to Gulfport, Biloxi and Mobile.

Quartet of Denver Tours

Outlining Routes to Pueblo, Royal Gorge, Buena Vista, Idaho Springs and Points North of the City

DENVER, COL., June 17—The Denver motorist or the visitor to the Queen City of the Plains who desires to escape from the city and its noises during the Fourth of July period has a wide variety of choice as to how he may spend July 4, 5, 6 and 7.

Tour No. 1 takes in a run from Denver to Colorado Springs the first day; from the Springs to Cañon City the second day; from Cañon City to Pueblo the third day, and from Pueblo to Denver the fourth day.

Tour No. 2 includes a run from Denver to Buena Vista by way of Turkey Creek Cañon the first day; a trip to Mount Princeton at Buena Vista the second day; a run back to Colorado Springs by way of Ute Pass the third day, and from Colorado Springs to Denver the fourth day.

Tour No. 3 embraces a run *via* Loveland to Estes Park, where one more day can be profitably spent; thence to Fort Collins and back by way of Greeley.

Tour No. 4 is shorter than the others and leads from Denver to Golden, to Idaho Springs and return by way of Creswell, Evergreen, Morrison, Fort Logan and Denver.

Beginning with Tour No. 1, the first day's drive, over excellent roads, is 72.8 miles over the main road from Denver to Colorado Springs by way of Castle Rock and Palmer Lake. The attractions at Colorado Springs are many and varied, including the Garden of the Gods, the Cave of the Winds, the cog railroad up Pike's Peak, Manitou, etc.

The second day's trip is 55.5 miles to Cañon City over a boulevard constructed by convict labor. Cañon City is near the entrance to the Royal Gorge of the Arkansas, one of the scenic wonders of the continent. The scenic feature is the Sky Line Drive and the scenic drive to the top of the Royal Gorge, 2,806 feet above the river and railroad tracks in the cañon below. Other attractions include Grape Creek, and Temple Cañons, Marble Caves, Saurian bone fields, all of which are readily accessible.

On the third day of the tour there is a run of 35 miles to Florence and 9 miles more into Pueblo, or "Little Pittsburgh," the second largest city in Colorado and the home of the smelter industry in the state. The road from Cañon City to Florence is good, while the 9 miles between Florence and Pueblo has been improved over its former sandy condition to become a part of the Santa Fé Trail-Royal Gorge-Rainbow Route. At Portland, 6 miles from Florence, is located the largest cement works in the Western country. Florence is the center of an oil, coal and fruit district. Pueblo has a Mineral Palace and other features well worth visiting.

The fourth day's run from Pueblo to Denver is made by way of Colorado Springs, a distance of 115 miles, with a choice of several routes from the Springs to Denver.

Tour No. 3 starts out with a run of 134.6 miles from Denver to Buena Vista by way of Turkey Creek Cañon, which enters the mountains west of Denver. Attractive features along the route are the Park of the Red Rocks at Morrison, where John Brisson Walker plans a Colorado summer home for the President of the United States; beautiful Platte Cañon with its summer resorts, a good stiff climb up Kenosha hill, a charming run through pastoral South Park, and then the descent over a recently-built automobile road into beautiful Buena Vista at the foot of the Collegiate Range. An automobile road is being built up Mount Princeton and there are several local trips worth while.

The trip from Buena Vista to Colorado Springs by way of Ute Pass covers 96 miles. First comes the climb of 1,600 feet

in 16 miles out of Buena Vista, east to Bath at an elevation of 9,470 feet above sea level. The route then passes through Hartzel with its hot springs, past Lake George to Florissant, Divide, Woodland Park, Green Mountain Falls, Cascade, Manitou and into Colorado Springs. The road is generally good even in wet weather and is constantly being improved. There are some sharp curves and steep pitches, but nothing to worry the average driver.

From Colorado Springs to Denver any one of several roads may be taken on the last leg of the trip.

Taking in the third trip, the first day's journey is from Denver to Estes Park by way of Loveland. The distance from Denver to Loveland is 51.3 miles and from Loveland to Estes Park is 32 miles. Loveland is in the midst of a rich irrigated region. It has a beet sugar factory. The dirt roads are adequate. From Loveland the Big Thompson Cañon is followed to Estes Park. This may soon become a national park and is worthy of a visit. Long's Peak, 14,271 feet above sea level, may be reached by a 5-mile trail hike and 2 miles of climbing. The Hallet and Sprague glaciers are worth seeing.

From Estes Park to Fort Collins the distance is 41.2 miles. Of this 21 miles are in the Big Thompson Cañon; a good road recently improved is found the remainder of the way. The State Agricultural College and United States government agricultural experiment station is located at Fort Collins and there are several interesting side trips to be taken from this northern Colorado city. It is a run of 67.5 miles from Fort Collins to Denver. Greeley is the home of the Colorado State Normal School. It was founded by the Greeley Colony and named in honor of Horace Greeley.

Trip No. 4 is an interesting journey into the foothills and scenic attractions directly west of Denver. The distance from Denver to Golden is 14.5 miles. Golden is the home of the Colorado State School of Mines. West of this town is the site of the Mountain Parks, for the opening of which to traffic and tourists the people of Denver recently voted. Golden is the center of wonderful clay deposits of all kinds. Idaho Springs, 39.6 miles from Denver by way of Golden, is the center of a great mining district. The first gold in Colorado was discovered here on Chicago Creek in 1859. Besides the mines, mills and tunnels there are hot springs and other attractions. The return trip by way of Cresswell, Evergreen and Morrison past Fort Logan to Denver is about the same distance as the outgoing trip.

East from Denver the country is fairly level and there are stretches where the sandy plains extend to the horizon, but in the main it is composed of rolling desert, the edges of the hillocks showing a strange sharpness, owing to the lack of erosion as known further east.

To the southeast the level effect is emphasized and to the northeast there are more hills. Through this dry plain there are a number of passable trails that were once used by semi-wild cattle in their journeys from the lowlands of Kansas to the foothills of the Rocky Mountains.

To the west, the foothills begin to jump up to the skyline almost at the city limits and the main wall of the continental backbone rises abruptly only a few miles in that direction. This wall is pierced by numerous canyons like the divisions in a backbone.



New Orleans' second general route to Beaumont, Tex.

Three Capitol City Tours

Poor Roads Render Care Necessary in Selecting Routes for Short Trips Starting at Washington

WASHINGTON, D. C., June 17—Delightful as Washington, with its immediate environs, is from a motoring standpoint, due to the smooth streets and highways, the tourist, once out of sight of the Capitol City, does not encounter roads which are overly attractive and runs of 2, 3 or 4 days must needs be selected with much care.

Tour No. 1 has Staunton, Va., as its objective point, and includes much territory over which the Federal and Confederate armies fought valiantly during the Rebellion. The first day's trip is to Gettysburg, 79.5 miles, via Frederick, 46.5 miles, and Emmittsburg, 68.5 miles. The second day takes the tourists across the glorious Blue Ridge by way of Buena Vista and Pen Mar, 20 to 25 miles, to Hagerstown, 65 miles. This route may be varied by returning via Emmittsburg, although the mountain trip is by far the more scenic. The third day sees the tourist bowling up the famed Shenandoah Valley to Staunton, 135.2 miles, stopping en route at historic Winchester, 42 miles. On the fourth day the return trip to Washington would cover 163.1 miles, driving down the valley to Winchester and then across to the capital.

Tour No. 2 covers some of the same ground, having that shrine of American patriotism, the Gettysburg battlefield, as one of its chief attractions. The first day's route would include Baltimore, Havre de Grace, Bel Air and Townson, the latter the night stop. The next day's ride will take the tourists up into the beautiful Cumberland Valley to Gettysburg via York, and then on to Hagerstown. The third day's journey will include an easy ride through Winchester, Berryville and Frederick to Washington.

Tour No. 3 has Philadelphia as its terminus. The round trip can be readily accomplished in two days, going via Annapolis, Baltimore, York and Lancaster, and returning by way of Wilmington, Havre de Grace and Baltimore, and if there be time, a detour to Frederick could be taken before returning to the capital.

Tour No. 4 is over the Capital City route, starting from the capital city of the nation and touching at the capital cities of the states of Pennsylvania and Maryland, Harrisburg and Annapolis. The first day's trip would be to Harrisburg, 146.4 miles, by way of Hagerstown, 74 miles; Shippensburg, 107.9 miles, and Mechanicsburg, 138.6 miles. The return journey will take the travelers through Gettysburg, Baltimore and Annapolis to the capital.



Washington is the nucleus of many historical tours



Minneapolis and St. Paul have some very beautiful short-tour routes, the lake district of Minnesota being especially attractive

Twin Cities' Short Tours

Run Through Indian Land to Aberdeen, and Others to Fargo, Taylor's Falls and Duluth

MINNEAPOLIS, MINN., June 17—Automobilists of the Twin Cities are especially well situated as regards scenic tours, and whenever the calendar affords an opportunity in the way of a holiday in close juxtaposition to the end of the week, as will be the case with the coming Fourth of July, there are preparations galore to take advantage of the good fortune. Situated as they are, within easy running distance of the beautiful lake district of Minnesota, Minneapolis and St. Paul are ideally located as starting points for trips through that section.

In the four tours here set forth it has been the object to provide trips of varying length in order that those who may desire to devote 1, 2, 3 or 4 days to their outing can select the tour that best accords with the time at their disposal. Trip No. 1 is a short one, to Taylor's Falls, 58.9 miles; No. 2, to Aberdeen, S. D., 322 miles; No. 3, to Duluth, 175 miles; No. 4, to Fargo, N. D., 264 miles. Nos. 2 and 4 will be found specially arranged for those who may desire to drink in the beauties of the lake district when it is at its best. The Duluth trip, besides offering many attractive side trips, is usually a cool one.

A short description of each of the tours follows:

Tour No. 1, to Taylor's Falls, 58.9 miles, is one of the favorites from the Twin Cities. It may be taken by several routes and when Taylor's Falls and St. Croix Falls, on the Wisconsin side, are reached there are a half dozen short tours to be made, returning at night to either city. At the new Interstate Park, the joint property of Minnesota and Wisconsin, a land of strange nature effects, are to be seen many pictures and profiles in the rocks, a prehistoric lake bed, and trout and bass streams. The itinerary of the most favored route would be Minneapolis to St. Paul, 10 miles; St. Paul to Centerville, 14.6 miles; Centerville to Chisago City, 18.8 miles; Chisago to Taylor's Falls, 14.5 miles.

Trip No. 2, the longest of the quartet here offered, will take the tourist from Minneapolis to Aberdeen, S. D., 322 miles. Passing through the lake region in the vicinity of Minneapolis, including Lake Minnetonka, Long Lake and a series in a chain

of water bodies, the route leads through one of the richest farming countries in the state, resembling in scenery many favorite Eastern routes for motorists. On the second day's run the road is through the Indian reservation of the Sissetons and Wahpetons and over the Choteau hills, where an occasional old-time claim shanty may be seen, the sneaking coyote, and the gullies in which the famous horse and cattle-stealing bands hid and were pursued. It is full of Indian history and lore. Aberdeen is in a rich prairie country. The first morning run should be from Minneapolis to Willmar, 98 miles, where good lunch accommodations will be found. In the afternoon there will be a leisurely drive from Willmar to Morris, 60.3 miles, where the first night may be spent. On the second day the itinerary calls for an easy jaunt from Morris to Sisseton, 61.8 miles, noon stop, and in the afternoon to Aberdeen, 101.2 miles.

Trip No. 3, from Minneapolis to Duluth, 175 miles, is a popular one, because it takes the traveler to the coolest place in the state, on Lake Superior, a live city, built on the hills, a town of good hotels and many sights and small tours. The picture of the great boats loading and unloading grain and ore at the docks in the harbor is fascinating.

The natural stopping places on the outward trip would be Cambridge, 44.9 miles, and Sandstone, an ideal place for mid-day luncheon. In the afternoon the drive to Duluth and Superior will be an easy proposition. On the return trip the next day a pleasant variation could be had by leaving the outward-bound route at Rush City, driving into the Twin Cities by way of Forest Lake.

Trip No. 4, from Minneapolis to Fargo, N. D., 264 miles, will take the tourist through the famous park region of lakes in Minnesota. It is a 2-day run each way, allowing for unlimited time at Fargo, which is remarkable for its climate, where the vegetation and grains of tropical as well as temperate climes grow. Fargo is the largest city of the state, the home of the famous agricultural college and pure food and experimental stations. It has good hotels. The night stop is at Alexandria, either way, and the return may be made by Wahpeton and Wheaton, with night stop at Morris or Benson. The itinerary would include: Minneapolis to Anoka, 18.4 miles; Anoka to Clear Lake, 35.1 miles; Clear Lake to St. Cloud, 31.3 miles (noon stop); St. Cloud to Sauk Center, 91 miles; Sauk Center to Alexandria, 48.5 miles (night stop); Alexandria to Fergus Falls, 54.4 miles; Fergus Falls to Barnesville, 40.4 miles (noon stop); Barnesville to Fargo, 39 miles (night stop).

Three Philadelphia Tours

New Jersey's Roads and Hotels, Gettysburg's Battlefields and Delaware Water Gap's Scenery Attract Quakers

PHILADELPHIA, June 18—While there is nothing particularly novel or striking about the scenery in southern New Jersey, the splendid roads and the excellent accommodations to be found en route render touring through this section very pleasant to the automobilist.

Maintaining a fair rate of speed, the run from Philadelphia to Cape May, a distance of 88.2 miles, may be made comfortably in from 4 to 5 hours, barring trouble on the road. A rough outline of the route from Philadelphia is as follows:

After ferrying across the Delaware River to Camden, the tourist follows Broadway down to Gloucester and straight through Woodbury to Glassboro, turning left at Franklinville and again at Malaga. Then square right into Vineland, 36.2 miles from Philadelphia. Then the road runs through several towns into Cape May.

The second day's run, of 63.3 miles to Atlantic City, takes the tourist through Cap May Court House to Seaville, where he turns square left to Tuckahoe and May's Landing. Here he turns square right into Pleasantville and Atlantic City.

If he desires to make this day's run a long one, by starting early, the tourist can go on from Atlantic City to Lakewood, an additional 67.6 miles, making the day's total 130.9 miles.

From Lakewood it is only 20 miles to Asbury Park by way of Point Pleasant. Long Branch is only 6.8 miles from Asbury, the drive up the ocean front being very pleasant.

A good return route to follow to Philadelphia, provided time is not pressing, is by way of Keyport, the Amboys, Metuchen, Plainfield, Morristown, Bedminster, Princeton, Trenton and Langhorne. It is 31.2 miles from Long Branch to Perth Amboy and 30.5 miles from there to Morristown by way of Metuchen, Plainfield and Chatham. From Morristown to Philadelphia is 85.6 miles, making the total mileage from Long Branch 147.3 miles.

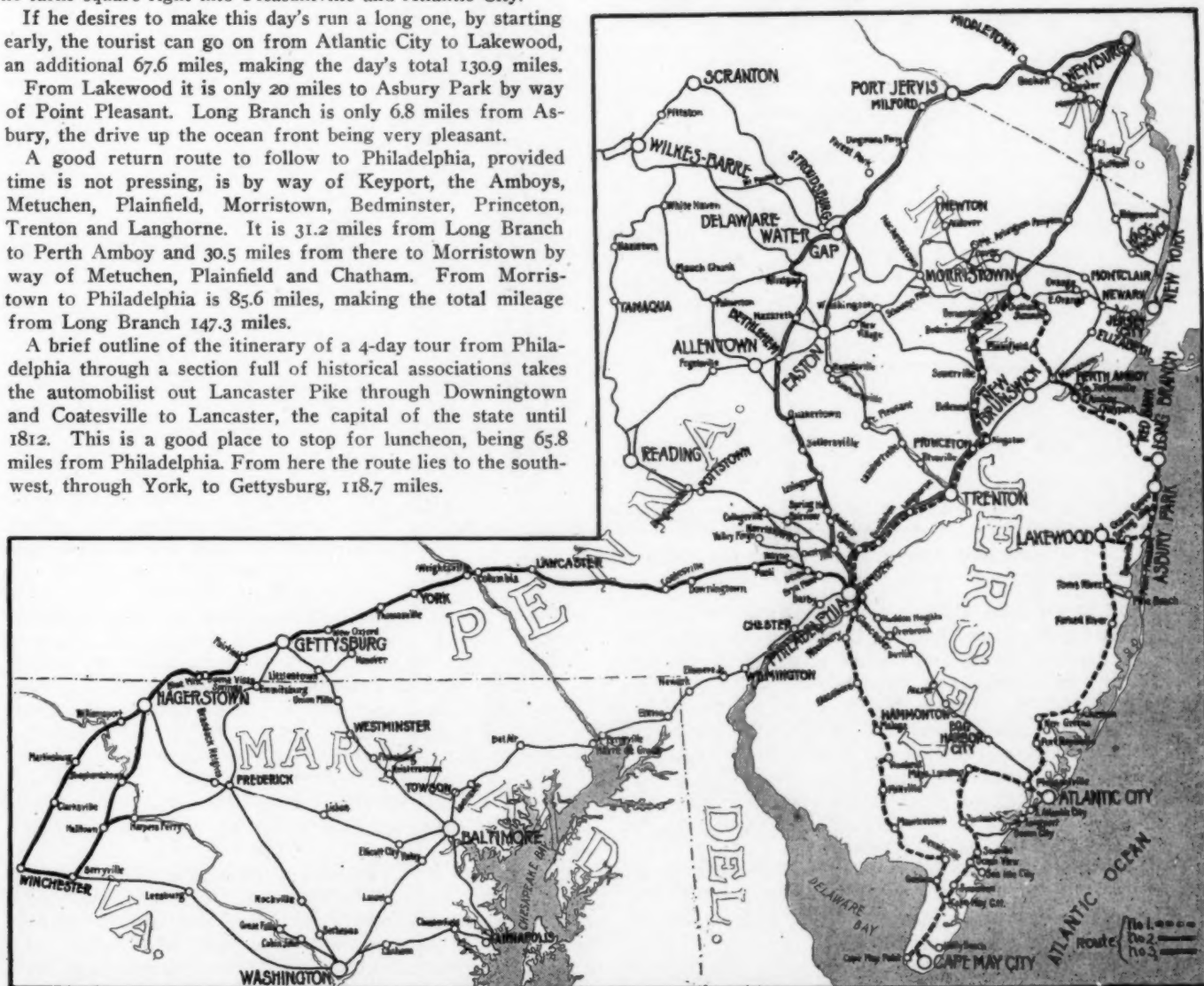
A brief outline of the itinerary of a 4-day tour from Philadelphia through a section full of historical associations takes the automobilist out Lancaster Pike through Downingtown and Coatesville to Lancaster, the capital of the state until 1812. This is a good place to stop for luncheon, being 65.8 miles from Philadelphia. From here the route lies to the southwest, through York, to Gettysburg, 118.7 miles.

Leaving Gettysburg on the second day, the road leads through Fairfield, over the Blue Ridge summit, across the Pennsylvania-Maryland line to Hagerstown, and Halltown. From here the road branches off to the left and leads to Harper's Ferry.

Leaving Harper's Ferry on the third day the automobilist should proceed southward through Berryville to Winchester, Va. At Winchester the return begins. Proceed north to Clarksburg and then on to Martinsburg and Hagerstown. Proceed to Gettysburg, and to York, where the stop for the night should be made. This takes in a distance of about 110 miles from Harper's Ferry as the day's jaunt. The fourth day finishes the trip to Philadelphia.

Scenically the trip from Philadelphia to Wind Gap, Delaware Water Gap, Port Jervis and Newburgh is superb. All along the route accommodations for party and machine are of the best. Starting from Philadelphia, the stop for luncheon can be made at Bethlehem. Here the road diverges to Nazareth, an old Moravian village. Beyond Nazareth the Kittatinny Mountain is ascended and then the road winds its way through the Wind Gap. This is a remarkable pass through the Blue Mountain. Descending this mountain with many wonderful views, the route leads to the Water Gap.

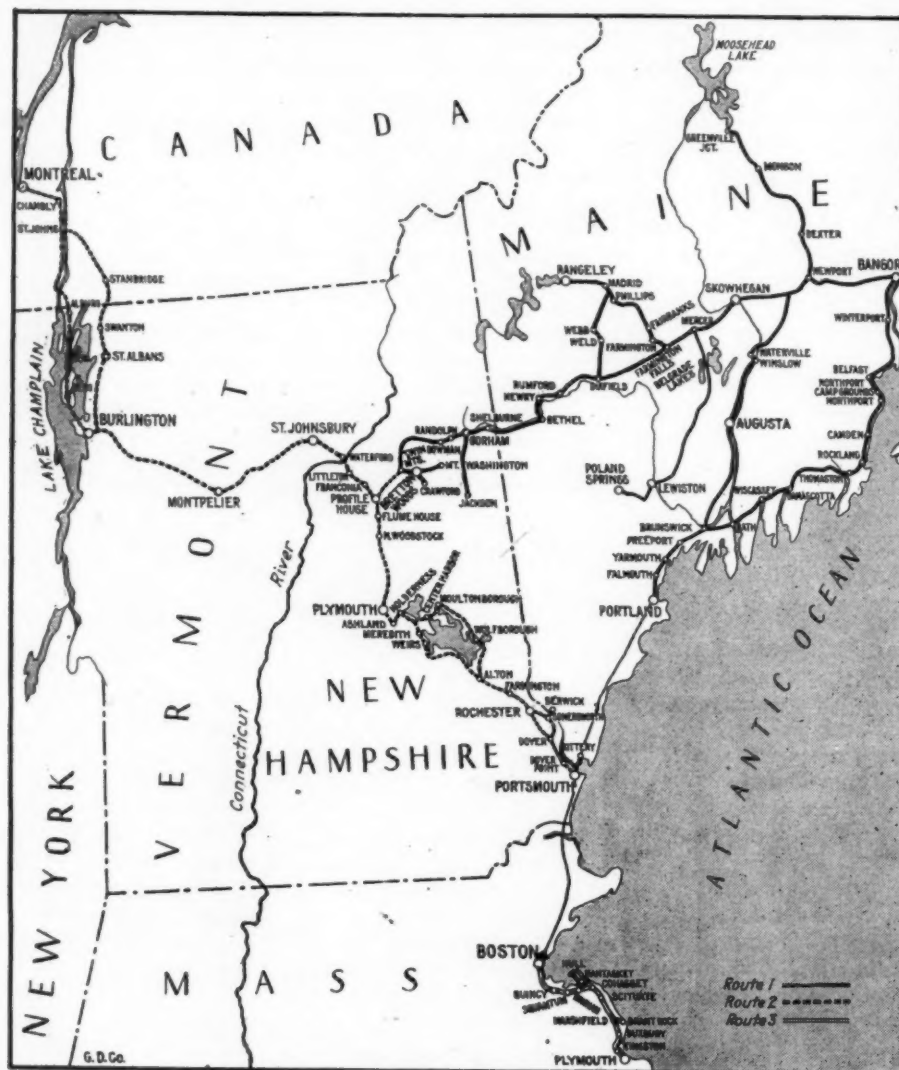
Beyond Milford, the next point reached is Port Jervis, which is located at the junction of the three states of Pennsylvania, New Jersey and New York. From here the run over the State Hill road, through Goshen to Newburgh is fascinating from the scenic standpoint. Returning the route is through New Jersey.



Map showing a number of interesting and pleasant routes to follow on short automobile tours, starting at Philadelphia

Three Short Tours from Boston

Into the Wilds of Maine, Through the Beautiful Lake Region and the White Mountains, a Vacation Paradise, and Across Vermont to Montreal



The route north from Boston is full of possibilities for the tourist

BOSTON to Plymouth makes a fine 50-mile trip, the roads being mostly macadam. Run out Commonwealth avenue and along the Riverway, Jamaica-way, Pond street, passing Jamaica Pond on the right Arrow-way, through Forest Hills to Franklin Park on the left. Follow Morton street through Milton Lower Mills (9.5 miles—mileage as given by the *Automobile Blue Book*) to Quincy (13.6 miles). This is the birthplace of Presidents John Adams and John Quincy Adams, whose remains lie in the crypt of the Unitarian Church (1828). At Squantum, a few miles to the north, is a cairn marking the landing place of Miles Standish in 1621.

In Hingham (19.8 miles) is the oldest meeting house in the country used for service (1681). It is called the Old Ship. Here also is the home of ex-Governor John D. Long and the old Lincoln house.

At Cohasset (26.4 miles), where the Jerusalem road comes in from Nantasket, passing through Scituate (30 miles), an old fishing village, we reach Marshfield (39.7 miles).

Marshfield is best known as the home of Daniel Webster. Brant Rock is one of the interesting towns near Marshfield. Nearing Duxbury (45 miles) we may see the 110-foot monument to Miles Standish near the site of his house. We now follow the shore through Kingston (47.9 miles) to Plymouth (52.4 miles).

Another lovely New England trip is from Portland, Me., through Bangor, Belgrade Lakes, Rangeley Lakes and the White Mountains, a distance of 331 miles.

Leaving Portland, we go north along Casco Bay, following the mileage of *The Automobile Blue Book*, and pass Falmouth, 6 miles beyond. Passing through Yarmouth (11.7 miles) and Freeport (17.6 miles) we reach Brunswick (26.4 miles), where Bowdoin College is located. The next city after Brunswick is the great shipbuilding city of Bath (34.4 miles) on the Kennebec River, which is crossed by a steam ferry. At Wiscasset (45.3 miles) a long bridge is crossed over the Sheepscot River, Rockland (81.8 miles) on the Penobscot Bay, commands a splendid view of the nearby islands. Beyond Camden (90.2 miles) we pass Mount Megunticook on the left and follow the shore line closely over a fine road, with an unexcelled view. At Northport (104.8 miles) a choice is offered of the shore route, which is very winding and picturesque, or a wider road which goes inland through the Northport Camp grounds to Belfast (109.2 miles). This route now runs along the shore of the bay, with fine views and over fine roads, through Winterport (131.1 miles) into Bangor (144.4 miles).

Our way now leads westward from Bangor to Rangeley (129 miles) via Newport (26.5 miles), whence are diverging routes to Moosehead Lake (57.2 miles) and Augusta (49.8 miles) over rolling highlands, passing through Waterville, where is Colby University, the Baptist College and large cotton mills, and Winslow, where is the old blockhouse which was once a part of Fort Halifax, and along the valley of the Sabasticook River. Moosehead Lake, which has about 400 miles of shore line, is 1,000

feet above the sea level and is the source of the Kennebec River. On clear days a fine view of Mount Katahdin is obtainable. This route, viz., Bangor to the White Mountains (186.4 miles), is practically the only available inland route from east to west across Maine, connecting at various points with cross-roads for the north and south. There is fine rolling gravel to Skowhegan (51.3 miles). The balance is fair to good.

At Mercer (67.7 miles from Bangor) one can take the left-hand road for Belgrade Lakes, about 10 miles distant, whence to Lewiston, 40 miles west, near which are the celebrated Poland Springs.

From Mercer the route leads to Farmington Falls (75 miles from Bangor) and at Farmington (79.5 miles) the road forks, going northwest to Rangeley (40.7 miles) via Fairbanks, Phillips and Madrid; or southwest to Dixfield (104.1 miles), whence also a road leads north to Rangeley (45.7 miles distant) through Weld and Webb's Lake, meeting the former route between Phillips and Madrid. Rumford (110.4 miles) comes next, then Newry (127.4

miles) and Bethel (133.4 miles) and the Prospect Hotel. Then along the Androscoggin River to Shelbourne and Gorham, Mount Madison House, whence is a road south to Jackson, passing the road to Mount Washington.

The following route makes a splendid tour: Portsmouth, N. H.; Lake Winnepesaukee, Plymouth, Littleton, St. Johnsbury, Vt.; Montpelier, Lake Champlain at Burlington to Montreal, Que., 325 miles.

Running northwest along the Piscataqua River from Portsmouth, we cross Great Bay on a series of bridges to Dover Point (5.3 miles), Edward Holton's settlement of 1623, known as Bloody Point.

Situated between Salmon Falls and Cocheco Rivers is Rochester (21.4 miles), which was named for the Earl of Rochester.

From here a road leads nearly north over a rolling country through Ossipee Valley and Chocorua (67.1 miles) and enters Conway (79 miles), the gateway of the White Mountains.

Continuing on our chosen route from Rochester, we ascend Ela River, through Framington (29.3 miles) into Alton (39 miles) and Alton Bay (40.2 miles).

At Meredith (62.1 miles) we cross the inlet from Lake Waukeba and follow the new state road to Squam Lake, leaving Center Harbor on our right.

At Squam Lake, a scenic gem, we view the Squam Mountains in the north with Mount Prospect forming a fitting background.

At Holderness (69.9 miles), leaving the lake region, we descend to the valley of the Pemigewasset River and follow the valley through Ashland (74 miles) to Plymouth (79.9 miles).

From Plymouth a road leads directly north through North Woodstock (101.5 miles), past the Flume House (106.6 miles) with its picturesque flume, ascending the Franconia Notch, with easy grades, past the Old Man of the Mountains, to the Profile House (111.6 miles). Circling Echo Lake, so-called from the echoes of Eagle Cliff, it turns right across the hills to the Ammonoosuc River, the valley of which it follows to reach Twin Mountains and Bretton Woods (130.4 miles).

Continuing on our original route, we leave the Profile House for Littleton, N. H. (12.6 miles) and continue through Waterford (18.1 miles) to St. Johnsbury, Vt., (31.6 miles), making the total 143.2 miles.

From St. Johnsbury we continue westward on fairly good dirt roads through the capital of the State, Montpelier, (38.7 miles) across the Green Mountains, with frequent grades, a few of them 12 per cent. Burlington (78.4 miles, total 221.6) on the shores of Lake Champlain. The University of Vermont is on an eminence in the eastern part of the city, and from its tower is a fine view.

From Burlington there are two routes to Montreal of nearly equal length, meeting at St. Johns, B. B. The one to the east of the lake via St. Albans, the other along the Alburg Tongue, joining the road from Rouses Point. Taking the latter, we cross the Wincoski river, and run north to South Hero Island (19.1 miles) where connection may be made with Plattsburg, N. Y. Another bridge takes us across to North Hero Island (32.7 miles) and the shore is closely followed until we cross the Alburg Tongue.

At Alburg, Vt. (46.9 miles) is the Customs House; it is necessary to arrange for Canadian registration, license and customs bond through a local broker. We now cross the International boundary and follow the Richelieu river through St. Johns (75.3 miles) to Chamby (86.7 miles) both interesting old French Canadian villages. Leaving the river we follow an old macadam road to Longueuil (100.6 miles) where the ferry running every half hour, leads to Montreal, a total of 325 miles.

Some Pittsburgh Routes

Historic Philadelphia Road the Favorite, But Trips to Buffalo and Detroit Are Also Popular

PITTSBURGH, PA., June 11—Pittsburgh's favorite automobile route for a long trip is the historic highway from Pittsburgh to Philadelphia. No route in this country is more replete with historical surroundings. The early colonial road extended out from Philadelphia through Lancaster to Fort Loudon and traders packed their goods from there over the Indian trail to the frontier. In 1755 the road was cut through to Fort Bedford and in 1758 it was extended to Fort Duquesne to accommodate the Forbes expedition.

The route out of Pittsburgh goes by way of Greensburg and Ligonier to the summit of the Laurel Ridge Mountains, thence there is a steep descent to Stoyestown, Pa. The tourist goes on to Bedford, one of the most beautiful spots in the state, and thence through the historic towns of McConnellsburg, Chambersburg and Stoneysbrook to Gettysburg.

Another very popular drive out of Pittsburgh for a 3- or 4-day trip is to Cleveland and on west to Toledo and Detroit. Two routes are open to Cleveland. One goes down the Ohio River by the Beaver road to Rochester, thence across the Beaver River to Beaver Falls. From that point a fairly good dirt road with short stretches of macadam leads through Salem and Ravenna and into Cleveland from the south. It is considered much better than the other route and passes through some beautiful farming country ending up with the picturesque scenery at Bedford, just south of Cleveland. The other route leaves the Beaver River at Darlington, Pa., and thence goes to Cleveland through the manufacturing towns of Youngstown, Niles and Warren and on via Chagrin Falls. In bad weather the clay roads are very hard to travel. From Cleveland the favorite route is along some of the lake shore drives out to Toledo and Detroit, the trip being very easy and hotel accommodations and repair shops being of the best. The distance to Cleveland is 129 miles by the first route and 135 miles by the second.

The third very popular route from Pittsburgh for vacation hunters is to Buffalo by way of Erie. This road leads out from Meadville and Sagerstown, a beautiful summer resort, to Erie. Another way to Erie is via Cambridge Springs, which is Pennsylvania's most beautiful and one of its most popular health resorts. The distance to Erie is 133 miles. From there to Buffalo, 90 miles, the road parallels Lake Erie all the way.

(Continued on page 1384.)



Pittsburgh has interesting tour routes to Philadelphia, Buffalo and Detroit

Legal News of the Week

Courts Differ as to Responsibility of Father for Accidents When Car Is Driven by a Member of the Family

Sultan Motor Company Loses in \$45,000 Damage Suit in Richmond—Other Cases

LIABILITY of a father for the results of an accident occurring during the use of the family's automobile under the handling of a minor member of the family, has been debated from various viewpoints since the beginning of the automobile vogue.

There are several diverse opinions that have been rendered by state courts, but a recent Kentucky case, *Stowe vs. Morris*, draws a distinct line that may be followed as a precedent to govern the decision of cases brought under similar conditions.

The rule, as construed by the Court of Appeals of Kentucky in this case is that where an automobile is used generally for the pleasure and convenience of the family and where no specified or implied knowledge of a particular trip is shown to have been had by the father, the father is not liable for damages resulting from the tortious acts of the minor member of the family who drove the car at the time the accident occurred.

In a Massachusetts case where the facts were somewhat different, the court held in *Smith vs. Jordan* that where a son performed the duties of a paid chauffeur, even though he received no compensation in money for so doing, the father was liable for the results of accident.

In both cases the courts held that the mere act of the father in generally allowing his son to drive should not be construed as turning him loose upon the public with a dangerous agency.

In the Kentucky case it was shown that the son of the defendant, 18 years old, invited his sister and another young lady to go riding and during the ride the plaintiff was injured. The findings of the court absolved the father from liability and placed it upon the son.

In the Massachusetts case, the father had given specific permission to his wife to use the car whenever she wished and had instructed his son, 20 years old, to take care of his mother on such rides. There the court held that the son was not acting on his own authority, but on the orders of his father, and that he was in fact the agent of his father. Therefore, the father was held liable for damage resulting from the operation of the car.

Of course, neither of these decisions has any bearing upon the liability of the owner of an automobile for the acts of an authorized paid representative, acting within the scope of his duties.

Graft Reduced; Deputies Go on Strike

WASHINGTON, D. C., June 15—The deputy sheriffs and constables operating in Montgomery county, Maryland, whose principal duty is the arresting of Washington motorists for speeding and for failing to have Maryland numbers, have gone on a strike. Heretofore they have been getting \$1.50 out of every \$15 fine that was imposed, but the sheriff of the county has not been figuring in the returns, so he issued an edict that each deputy had to divide the \$1.50 with him. Washington motorists are having the time of their lives on the roads in Montgomery county.

Jury Against the Sultan Company

RICHMOND, VA., June 17—The \$45,000 damage suit of the Virginia Taxi Service Company against the Sultan Motor Company and the Otis Elevator Company came to an end Saturday night

before Judge B. T. Crump and a jury in the law and equity court. The jury adjourned over to Monday to render a decision.

The jury returned a verdict for the plaintiff for \$20,000 damages. Hearing of a motion to set the verdict aside was deferred until officials of the defendant company can be communicated with.

The case had been in progress for two weeks when it was given into the jury's hands. The plaintiff concern asked for damages on the plea that the taxicabs purchased from the bidders did not perform the services expected of them.

On Saturday the Otis Elevator Company was absolved from any connection with the case, the court being shown that the elevator company had improperly been made a defendant to the suit. Judge Crump held the Sultan Company alone a defendant to the action.

De Tamble Asks Change of Venue

ANDERSON, IND., June 17—Suit has been brought in the Madison county circuit court at Anderson, Ind., by the Sheldon Axle Company, of Indianapolis, asking that a receiver be appointed for the De Tamble Motor Company, of Anderson. The De Tamble company has asked for a change of venue to another county. Suit asking that a receiver be appointed for the De Tamble company was brought recently by the United States Ball Bearing Manufacturing Company.

Chauffeurs to Fight Maryland Law

BALTIMORE, MD., June 16—Professional chauffeurs of this city are indignant over that section of the new motor car law which provides that professional chauffeurs—that is, men who drive for wages cars that are hired out—shall pay \$5 for their drivers' licenses while others shall pay but \$2, and have started a fight against it. They have engaged two attorneys and one of the chauffeurs arranged to be arrested for not having the \$5 license. He was arraigned before Magistrate Supplee in the Central Police Station and fined \$1 and costs and, as planned, the attorneys took the case to the grand jury.

Want Striking Molders Punished

BUFFALO, N. Y., June 12—The order to show cause why certain members of Local 84, International Molders' Union of North America, should not be punished for contempt of court

May Abandon the Oldfield Bill

Committee Will Discard or Modify It

WASHINGTON, D. C., June 18—Semi-official announcement is made that the Patents Committee of the House has decided to abandon the Oldfield bill. While positive action throwing the measure into the discard has not been taken, the committee has determined to throw over the recodification feature and center its action on clauses 17 and 32.

These sections of the bill, as explained in these columns, refer to the compulsory working and the use clauses of the measure. Even these sections will probably be modified before coming to a vote in committee.

The proposed changes will loosen the hold of the law on the inventor while maintaining a grip on the corporation-purchaser. Just how this is to be accomplished is veiled in more or less mystery.

The intention of the law-makers is to prevent trusts from acquiring patents for the purpose of pigeon-holing them and preventing the public from getting the use of such patents except under onerous circumstances.

for alleged violation of an injunction which restrained members of the union from interfering with the men who have filled the places of striking coremakers and molders in the plant of the Aluminum Castings Company, makers of aluminum castings for automobiles, was heard Tuesday by Judge Hazel in United States District Court here. Daniel V. Murphy, the union's counsel, charged wilful and deliberate perjury by those who filed the affidavits maintaining that orders of the injunction were being violated, while Attorney George P. Keating, representing the Aluminum company, emphatically denied charges of perjury. Judge Hazel received briefs and reserved decision.

Marylanders Want New Motor Law

BALTIMORE, MD., June 14—After having sent all members the legal phases of the present Maryland motor vehicle law, the Automobile Club of Maryland called a meeting of members, who discussed ways and means to bring about a clear, concise and rational motor vehicle law at the next session of the Legislature. President Rowe was requested to appoint a committee of three to wait on Governor Goldsborough and request that he appoint a commission to properly draft such a law. The club also asks owners to have their drivers abide by section 140 H of the present law in using horns and signaling devices.

New Albany Plant Is Auctioned

NEW ALBANY, IND., June 16—The plant of the American Automobile Manufacturing Company was sold at a receiver's sale yesterday afternoon. The property was bid in by the American Automobile Corporation, a new company, formed chiefly by the stockholders of the old concern, at \$17,500. The purchasers, however, assume a mortgage against the plant amounting, together with the interest due, to \$25,000, together with some taxes and small claims that bring the purchase price up to \$45,000.

Mosler Sues Bloomingdale Brothers

Bloomingdale Brothers, New York department store corporation, has been sued in the United States District Court on behalf of A. R. Mosler & Company for alleged infringement of the Mosler patent rights. The charge made against the department store is the advertising and sale of Mosler plugs at a smaller price than the one fixed in the license under which the plugs are being handled.

Everitt Announces New Plans

Firm's Organization Now Completed

DETROIT, MICH., June 17—Plans of the Everitt Motor Car, recently reorganized from the Metzger company, are causing great local interest. With the exception of the formal acquisition of Walter E. Flanders, the firm's organization is said to be now complete.

Sales manager Paul Smith is modeling a system of district distribution, the detailed management of which he has placed in the hands of men associated with him in the past. The districts will be under Assistant Sales Manager Frank H. Smith and are as follows:

San Francisco district, T. J. Toner; Portland district, Charles E. Booth; New York district, C. F. Redden; Charlotte, N. C. district, A. Burwell, Jr.; Buffalo district, Frank M. Greene; Indianapolis district, Frank B. Willis; Louisville district, E. L. Jacoby; Des Moines district, C. F. Stewart; Kansas City district, C. E. Stebbins; Minneapolis district, C. R. Newby; Philadelphia district, E. G. Oliver. Charles F. Adams is in charge of the Everitt manufacturing department.

Extension for U.S. Motors

Strong Elected a Director and Chairman of the Executive Committee of the Company—Big Business Done

Time Granted Will Carry the Concern Over the Contract and Selling Seasons

W. E. STRONG, brother of Vice-president Strong of the Bankers' Trust Company, has been elected to membership in the Board of Directors of the United States Motor Company and will have direct charge of the financial affairs of the company. He will act as chairman of the executive committee.

An advisory committee has been selected to assist the management of the corporation and to work in conjunction with the financial ideas of Mr. Strong. It has been announced on behalf of the company that an extension of time for 90 days has been secured from the principal creditors holding U. S. Motor paper that is falling due at present and which will mature in the near future. Claims involved foot up to about \$750,000.

Since April 1, the company has broken all its records for large business and is rapidly clearing its warehouses of the lag end of the 1912 stock. It has been stated that the total manufacturing business of the year has reached the enormous total of 22,000 automobiles and that there are only a comparatively few cars of one model still in stock.

The company's current receipts have been enormous and the rumors that have been floated have proved a surprise to many in the industry and out of it.

At headquarters an optimistic view of the matter is held. There, it is stated that the 90-day extension granted by the creditors will be sufficient to carry the concern over the contract-making period for 1913 and that with the clearance of the loose ends of the 1912 business the company will be able to fund itself.

The creditors' list includes the following financial houses: Bankers' Trust Company, Chase National Bank and Moseley and Company.

In future all ordered goods will be paid for in cash.

Mr. Strong Makes Announcement

Mr. Strong, on behalf of the United States Motor Company, made the following announcement:

"The situation that confronts the company is to conserve its interests so that it can finance its manufacturing operations for 1913. To this end the company is now devoting its attention and the banks and merchandise creditors have joined hands in the endeavor.

"I will not state the approximate amount of immediate indebtedness but will say that the difficulty in which the company finds itself is due largely to the fact that the automobile industry is one of seasons.

"The present extension of time on the commercial paper is designed to carry over the company during the season of returns from the selling."

It is understood that the bank loans involved in the extension were for notes discounted to carry on manufacturing and to purchase parts that go into the cars turned out by the company. It is also said that the merchandise accounts are not large because of the fact that a portion of them have been taken up with the cash secured from discounting the notes.

The company will continue operation without interruption in factory activity.

Creditors of the United States Motor Company belonging to the Motor and Accessory Manufacturers held a meeting Wednesday to discuss the situation of the concern. The bankers, under the leadership of Mr. Strong, had invited the accessory and parts

To Make Six-Cylinder Marmons

INDIANAPOLIS, IND., June 17—Announcement that a line of six-cylinder cars will be added to its four-cylinder line for the 1913 season has been made by the Nordyke & Marmon Company of this city. The company has been working on a six-cylinder car for 2 years, beginning with the construction of the Marmon Wasp, which won the Wheeler and Schebler trophy in a 200-mile race in 1910 and the 500-mile race in 1911.

The new line is to be made in four models, for two, four, five and seven passengers. The wheelbase will be 145 inches. A special feature will be a new front axle, in which the vertical spindle is placed in the direct center line of the wheel, insuring ease and safety in steering and permitting the car to turn in a 40-foot street. There will also be a new brake feature consisting of two expanding shoes, with a combination metal and asbestos fabric facing, which press against steel drums in each rear wheel.

Goodrich Company Elects Officers

The following officers were elected at the first formal meeting of the reorganized B. F. Goodrich company; G. G. Work, president; A. H. Marks, vice-president and general manager; E. C. Shaw, second vice-president and manager of works; H. E. Raymond, vice-president and sales manager; W. B. Miller, vice-president and assistant sales manager. C. B. Raymond was re-elected secretary and W. A. Means, treasurer.

Automobile Securities Quotations

Few movements of importance were noted in the automobile stock market during the past week. Politics absorbed the attention of the purchasing public to a large extent and the trade itself displayed little apparent interest. The rubber shares were easier but prices were well maintained. Goodrich was off a shade; Rubber Goods was steady, while the asked price of Goodyear was advanced 5 points. The automobile shares were generally steady. There were small concessions to be had in General Motors, and buyers were more active in United States Motor issues than were the sellers. The common stock was up 1-2 point to 4 and the preferred advanced on small-lot buying to 15 bid. The extension of time on the obligations of the company was apparently discounted in the market 2 weeks ago.

The following comparative table shows the level of prices compared with that of a year ago:

	1911		1912	
	Bid	Asked	Bid	Asked
Ajax-Grieb Rubber Co., common.....	...	...	110	115
Ajax-Grieb Rubber Co., pfd.....	...	...	90	100
Aluminum Castings, preferred.....	...	...	100	...
American Locomotive, common.....	42	42½	41½	41¾
American Locomotive, preferred.....	109¾	110¾	107	108¾
Chalmers Motor Company.....	...	...	140	160
Consolidated R. T. Co., common.....	5	10	15	17
Consolidated R. T. Co., pfd.....	15	20	55	60
Diamond Rubber Company.....	284	286	280	285
Firestone Tire & Rubber Co., com.....	160	170	279	281
Firestone Tire & Rubber Co., pfd.....	103	105	106	108
Garford Company, preferred.....	...	...	99	101
General Motors Company, common.....	53¾	54¾	33	35
General Motors Company, preferred.....	88	89	75	75½
B. F. Goodrich Company, common, old.....	238	243	79½	80½
B. F. Goodrich Company, pfd., old.....	115½	116½	108¾	108¾
Goodyear Tire & Rubber Co., com.....	210	220	...	276
Goodyear Tire & Rubber Co., pfd.....	104	105	100	102
Hayes Manufacturing Company.....	...	...	...	104
International Motor Co., com.....	...	...	26	29
International Motor Co., pfd.....	...	...	89	92
Lozier Motor Company.....	...	...	45	55
Miller Rubber Company.....	...	...	155	160
Packard Motor Co., preferred.....	...	...	104½	106
Peerless Motor Company.....	...	...	...	...
Pope Manufacturing Company, com.....	51	55	30	32
Pope Manufacturing Company, pfd.....	77	79	74	76
Reo Motor Truck Company.....	8	10	9	10
Reo Motor Car Company.....	23	25	24	24½
Studebaker Company, common.....	...	...	36	38
Studebaker Company, preferred.....	...	...	94	96
Swinehart Tire Company.....	...	...	104	106
Rubber Goods Company, common.....	85	90	100	...
Rubber Goods Company, pfd.....	100	103½	107	112
U. S. Motor Co., common.....	41	43	4	4½
U. S. Motor Co., preferred.....	82	83	15	17
White Company, preferred.....	...	...	107½	108½

Crops Will Boom Trade

Government Figures Show that 1912 Grain Yield Will Surpass 1911 by 226,000,000 Bushels

According to This, Many Farmers Will Buy Cars This Summer

WASHINGTON, D. C., June 15—According to the report of the Department of Agriculture, there will be 226,000,000 bushels more small grain raised in 1912 than in 1911. The report covers specifically the estimated yields based upon the reported conditions as of June 1 of the spring and winter wheat, oats and barley crops.

It is too early to learn anything about the corn and rye crops, but in the case of corn it is known that the acreage will be larger than in 1911. It is estimated that a decrease in winter wheat, amounting to 67,000,000 bushels, will be shown at the end of the crop year. This is more than counterbalanced by the increase figured in the spring wheat yield, which is placed at 74,000,000 bushels. The condition of spring wheat on June 1 was 95.8 as compared with 94.6 in 1911 and 93.8 as a 10-year average, the figures being as follows:

Crop.	Yield in Million Bushels.		Condition.		10-Year Average.
	1912.	1911.	1912.	1911.	
Spring Wheat.....	265	191	95.8	94.6	93.8
Winter Wheat.....	363	430	74.3	80.4	80.9
Oats.....	1109	922	91.1	85.7	88.4
Barley.....	192	160	91.1	90.2	90.8

The middle western section, including the winter wheat belt, is the only section of the country where decreases of material size are shown and those same states are always high in the list of corn producers. As the acreage of winter wheat is over 11 per cent. less than in 1911, the chances are that the corn acreage will be proportionately larger.

Washington Plant to Be Sold

WASHINGTON, D. C., June 15—By virtue of an order of the Supreme Court of the District of Columbia, holding a bankruptcy court, in the case of the Carter Motor Car Corporation, Lucas P. Loving, the trustee, will sell at public auction June 19, the entire equipment of the corporation located at Hyattsville, Md., together with the real estate upon which the factory is located, as an entirety, and if a satisfactory bid is not obtained will immediately be sold in detail.

Sanctions M. A. M. Session Feature

Several matters of trade importance will come up for action at the summer meeting of the Motor and Accessory Manufacturers, whose directors assemble in New York, June 28. The question of sanctions will be the chief item considered and the action will extend to the circuit dates presented by the National Association of Automobile Manufacturers.

Board of Trade Plans Meetings

Plans for the convention of pleasure-car sales managers are slowly forming along the lines followed by the truck branch of the automobile industry. Chairman H. O. Smith, of the committee which has this work in hand has announced no definite plan so far but the matter has been presented to the various companies for suggestions as to program and the ground to be covered.

The summer meeting of the Automobile Board of Trade is scheduled for July 11 and it was the original intention of the committee to hold the convention of sales managers at about the same time.

Milwaukee Preparations

Sanctions Have Now Been Issued for Races and Work Will Be Started on the 9-Mile Course

Milwaukee Dealers Propose Banking the Turns on the Course With Concrete

MILWAUKEE, WIS., June 18—By the end of the week it is believed that sanctions will have been issued by the American Automobile Association and the Automobile Club of America for the Vanderbilt, Pabst and Wisconsin motor cups and the Grand Prix road races in Milwaukee on September 17 and 21. Bart J. Ruddle, race secretary of the Milwaukee Automobile Dealers' Association, left for New York Saturday night, laden with several suit cases full of information, blanks, guarantees, etc., which doubtless will result in the grant of the A. A. A. and A. C. A. permits.

More than 400 laborers will be placed at work on the cup course in the town of Greenfield at the moment Mr. Ruddle wires the M. A. D. A. that the sanctions have been issued. While there is absolutely no reason to believe that the sanctions will be refused, the M. A. D. A. is proceeding with care and desires to avoid any legal difficulties in regard to expending moneys contributed by citizens by going to work on the roads before the last official detail has been attended to. With ten gangs of workmen on the job, it will not take long to rebuild the 9-mile circuit into the prescribed 8.725 mile race course.

E. G. Williams, personal representative of Wm. K. Vanderbilt, Jr., inspected the course last week. Mr. Williams, being an expert road engineer, and formerly connected with the New York state division of highways, is regarded as an authority and his opinion that the Milwaukee course should develop into the finest road racing circuit ever prepared in America has caused much good feeling. That is the opinion of all experts and near-experts who have examined the Greenfield course, and it makes things look as if even Tetzlaff's records may be excelled at Milwaukee next fall.

An innovation in road race courses is proposed by the M. A. D. A. Each of the four principal turns will be banked and constructed of concrete. The largest turn, at the south end of the course, will be rebuilt to a radius of 1,500 feet and will be banked nearly as high as the Indianapolis speedway turns, according to present plans. The turn will be built on private property, as the public roads are hardly fit for treatment.

The policing of the course has been settled in all details, and Secretary Ruddle took with him to New York contracts with the Wisconsin National Guard which may astonish the New Yorkers for the size of the army that will patrol the course. A different set of guards will probably be on the course on each of the 2 days of racing.

MILWAUKEE, WIS., June 19—(Special Telegram)—All formalities in connection with the running of the Grand Prize and Vanderbilt cup races in this city were completed yesterday. The Contest Board of the American Automobile Association and the Contest Committee of the Automobile Club of America issued the necessary sanctions so that arrangements can now go on consistently. Bart J. Ruddle, manager of the race, was assured that his report and plans were entirely satisfactory to both organizations.

Gas Engine Men in Convention

MILWAUKEE, WIS., June 19—Several hundred gas engine builders, jobbers, agents and others interested in the production and selling of internal combustion motors of all kinds, are attending the semi-annual convention and annual exposition of the

National Gas Engine Association in Milwaukee this week. Freight rates, insurance restrictions, oil inspection, industrial education and a score of other topics are being discussed.

At today's session, A. E. Potter, of New York, delivered an address on "Some Lubrication Problems." "The Diesel Motor" was the subject of an illustrated discussion by A. O. Krieger, of St. Louis. On Thursday H. E. Phillips, of Dayton, O., will discuss "Something About Ignition," and L. W. Ellis, of LaPorte, Ind., is slated for a talk on "The Tractor."

Friday will be devoted to advertising and publicity talks. E. R. Shaw, president of the American Trade Press Association, will speak on "Publicity Through Trade Journals and What It Means to the Manufacturer." Charles H. Hall, of Milwaukee, is scheduled for a discussion on "Direct Advertising to the Dealer."

In the exhibits, which fill the arena of the Auditorium, are a number of motor cars manufactured by concerns which are essentially engine builders.

Big Crowd Sees Stanley Hill Climb

CINCINNATI, O., June 15—Twenty thousand people viewed the annual hill climb of the Cincinnati Automobile Dealers' Association on Stanley avenue, West End, this city, today. Out of thirty-three entries, more than twenty-four starters came to the tape. There were seven events in which automobiles participated. The honors of the day went to the Cino cars, which secured three firsts and one second place. The course has an 11 per cent. grade and it is 273 feet short of being one-half mile in length. The summary follows:

Event	Winner and driver	Time
1. Piston displ. 160 and under. Class C.....	Flanders, Sackett.....	37
2. Piston displ. 160-230. Class C.....	Buick, Hisey.....	34%
3. Piston displ. 231-300. Class C.....	Cino, Fritch.....	31%
4. Piston displ. 301-450. Class C.....	Buick, Hisey.....	29%
7. Club members—full equipment.....	Cino, Radina.....	34%
(4 passengers)		
5. Free-for-all—full equipment.....	Cino, Radina.....	34%
(4 passengers)		
9. Free-for-all—Class D, stripped.....	Buick, Hisey.....	29%
(Big event)		

American Sales Increase in England

There was an increase in the sales of American automobiles in England during 1911, compared with the previous year, says a late consular report. In certain makes the demand was greater than the supply. Since the government has raised the tax on motor cars according to horsepower, the demand for the higher priced car has declined, while the medium and lower power cars of 15 to 25 horsepower are in demand.

During the past year a new motor vehicle, called cycle car, has been developed. It is in reality a light four-wheeled runabout seating two passengers and with engines up to 8 horsepower. There are several makers experimenting with belt, chain and shaft drives in endeavoring to place on the market a popular vehicle which can be produced to sell under \$480.

Drawback Allowed on Rough Parts

WASHINGTON, D. C., June 8—Under a ruling made by the Treasury Department, drawback will be allowed under section 25 of the tariff act and the regulations promulgated thereunder on motor gears, transmission cases, gauge blanks and other articles of iron and steel imported in the rough and finished by the Brown & Sharpe Manufacturing Company, of Providence, R. I. The allowance shall not exceed for exported finished article an imported corresponding article, and if there is any valuable wastage, the value of such waste shall be taken into consideration in computing the drawback.

Wood Costly to Automobile Makers

LANSING, MICH., June 18—Of all the wood-using industries of Michigan, the makers of automobiles pay the highest price for what they use, according to a report of the wood-using industries of Michigan by H. Maxwell, expert for the Public Domain Commission. The report says:

"They demand no wood that is not demanded by other manufacturers, but they must have the best, and high cost is the result. Twenty-six species of wood are listed, the three most largely used being white ash, hickory, and yellow poplar. The cheapest of the twenty-six species cost more than \$20 a thousand, while three of them cost more than \$100 a thousand, these being black walnut, mahogany and Circassian walnut, the latter being \$345 a thousand. The strong, stiff woods are made into frames, hickory goes principally into wheels, much of the interior of the bodies is of elm, while the fine, handsome woods are used for finish for tops and bodies. A fine automobile requires a rather large amount of expensive wood for finish in the panels of the body, the steering wheel and other parts and trimmings. The wood finisher does his best work on this class of output. More than two-thirds of the automobile wood is not grown in the state, and the home product is cheaper. Its average cost is \$52.81, while that brought from elsewhere is \$59.56."

A. C. A. Suspends Club Features

Closely following upon the induction into office of the new régime at the Automobile Club of America, orders were issued to call in all privilege cards and following upon the heels of that order the management has practically closed down the club features of the organization. The restaurant, grill, reading rooms and other departments have been suspended.

The club is operating the garage, laboratory and a few other features. Few actual resignations have been sent in since the revolution and rumors of another attempt to wrest the management from the Whitridge régime are in active circulation.

S. A. E. Program at Detroit

The program to be followed by the Society of Automobile Engineers at the Detroit meeting is as follows:

Thursday, June 27, Morning Session, 10 a. m., Convention Hall, Pontchartrain Hotel.

Business meeting. Presidential address. Treasurer's report. Report of Tellers of election of members. New business.

At 1 o'clock the members will assemble at the Hotel Pontchartrain (or other point to be announced at the morning session) whence cars will be taken for visits to manufacturing plants. In the evening the members and the ladies of the party will go on board the steamboat City of Detroit II, at the D. & C. dock, foot of Wayne Street. The boat will sail at 8 p. m.

Friday, June 28.—Time and place of professional sessions and social gatherings on shipboard as announced.

Saturday, June 29.—Time and place of professional sessions and social gatherings on shipboard as announced.

The steamboat will arrive at Detroit on the return trip at 10 p. m. Saturday.

Professional Papers and Reports.—The following papers and reports will be presented at the professional sessions on Friday and Saturday:

PAPERS

The Standardization Work of the Society of Automobile Engineers. Henry Souther (Chairman Standards Committee).

Stability of Automobile Propeller-Shafts. J. M. Thomas.

Method of Brake Capacity Determination. S. H. Fekete.

Leaf Springs. L. J. Lane.

A Comprehensive Motor Test. Herbert Chase (Introduction by Professor F. R. Hutton).

Worm Gears. Frank Burgess.

Standardization and Co-operation in Motor Testing. Herbert L. Connell.

Cost of Work with Gasoline Motor Trucks. Louis Ruprecht.

Motor Sizes and Drive Ratios for Commercial Vehicles. E. P. Batzell.

The Effect of Relation of Bore and Stroke in Automobile Engines. John Wilkinson.

REPORTS

Springs Division. Harold L. Pope, Chairman.

Broaches Division. C. W. Spicer, Chairman.

Frame Sections Division. J. G. Perrin, Chairman.

Ball and Roller Bearings Division. David Fergusson, Chairman.

Sheet Metals Division. T. V. Buckwalter, Chairman.

Carburetor Fittings Division. G. G. Behn, Chairman.

Miscellaneous Division—Flanges and Rod and Yoke Ends.

Wheel Dimensions and Fastenings for Tires Division. Wm. P. Kennedy, Chairman.

Truck Standards Division. Wm. P. Kennedy, Chairman.

Nomenclature Division. Howard E. Coffin, Chairman.

Data Sheet Division. Cecil P. Poole, Chairman.

TOPICS FOR DISCUSSION

Relative Merits of European and American Carbureters.

Motor Car Acceleration.

Electrical Wiring and Gasoline Connections on Motor Cars.

Gas Engine Inlet and Exhaust Manifolds.

Rear Axle Transmissions in Motor Cars.

A meeting of the Standards Committee will be held at the Pontchartrain Hotel, Detroit, at 10 a. m., on Wednesday, June 26, at which time various subcommittees or divisions of the Standards Committee, constituting the S. A. E. Professional Committees, will report, their reports having been passed on previously at a meeting of the Society Council.

COKER F. CLARKSON, General Manager.

85,300 Cars in New York

Secretary of State's Report Shows That Registration Up to June 1 Exceeded the Total for 1911

This Would Indicate That the State's Present Total Is Well Over 90,000

SECRETARY of State Lazansky has issued a report covering the registration of automobiles during the period from February 1 to June 1, showing that the total number of automobiles certified by his office was 85,300. These figures cover all varieties of motor vehicles, including commercial vehicles and electric as well as gasoline-propelled cars.

The showing indicates an enormous increase in the number of automobiles in the state of New York, for the registration of 4 months is more than the entire registration of 1911. During last year the total number of cars to be registered was 84,089 and during the time from June 1, 1911, to February 1, 1912, the registration was not far from 20,000.

At that rate there may be registered in New York between June 1, 1912, and February 1, 1913, at least 25,000 more cars, which would bring the total registration to more than 110,000.

According to the figures reported by Secretary of State Lazansky the cars in service are divided as follows:

Vehicles other than commercials.....	76,164
Commercials	7,320
Dealers	1,572
Exempt	244
Total.....	85,300

Dealers to the number of 381 are registered from the four counties composing Greater New York. As the cars included under the head of dealers' demonstrators and stock probably averages at least five to the dealer, it is plain that the totals should be at least 1,500 more for New York or 6,000 more for the whole state. This would bring the present total to a level over the 90,000 mark.

The number of chauffeurs licensed to June 1 was 36,065. The revenue from fees for the period amounted to \$856,310.25 and the total for vehicle licenses was \$749,410.

Chicago Trying to Avert Accidents

CHICAGO, ILL., June 17—Chicago's city council, in its efforts to minimize motor car accidents, has just passed an ordinance, which is up to the mayor for his signature, designed to compel drivers of motor cars and riders of motorcycles to stop at all street crossings when street cars have stopped to take on or discharge passengers. Operators of motor-driven vehicles are called upon to halt within not less than 10 feet of street cars that have stopped.

The council also has added to the ordinance a clause which prohibits the manipulation of any rear lights from the seats of an automobile. If this is enforced, it means that the driver must get out of his car in order to light or extinguish his tail light.

Motor Mart for Syracuse Dealers

SYRACUSE, N. Y., June 8—The Syracuse Automobile Dealers' Association plans to organize the leading dealers of the city in a "motor mart," on a large tract of land near the center of the city. The plans embody a large two-story building with a big demonstration court in the center, roofed with glass, the whole to cost about \$100,000 and to accommodate some seventeen stockholders. The association has re-elected C. Arthur Benjamin, president, and W. M. Kerr, vice-president. John H. Valentine resigned as treasurer, and George H. Norris was elected



New York's electric car suburban run.—Before the start



Start of the electric run.—Leaving Columbus Circle

to the position. The association plans for a 2 weeks' annual exhibition next year, the second week to be devoted to a display of commercial vehicles.

Electric Run Great Success

Many New Yorkers Tour to Bronxville in the Annual Suburban Run

WITH the contest feature entirely eliminated, the annual suburban run of electric pleasure cars last Saturday was completely successful. Despite the threatening weather, fourteen entrants lined up at Columbus Circle and after a run to Bronxville, the whole fourteen finished without a skip, making the 45 miles in splendid style.

No mechanical or battery trouble was experienced throughout the run, and, but for the lowering clouds and scattering rain, the affair proved enjoyable in every way.

The starters included six Bakers, two of which were entered by the Edison company, of New York. These were a roadster, driven by a chauffeur, and a four-passenger touring car driven by Mrs. Harvey Robinson. The Baker company entered three cars; two coupés driven by P. W. Brakeley and a demonstrator and a victoria driven by J. A. Brown, who acted as pacemaker and pathfinder. Mrs. E. E. Schwartzkopf entered and drove the other Baker. There were two Rauch & Lang cars, one a victoria and the other a brougham driven alternately by Mr. and Mrs. C. Y. Kenworthy; three Detroit electrics, two of which were broughams, driven by Mr. and Mrs. Albert Weatherby, and a victoria driven by a demonstrator; two Hupp-Yeats, a coupé and roadster, driven by Mrs. W. R. Christopher and A. W. Christopher, respectively, and a Flanders driven by A. C. McIntosh.

The route was to Bronxville, in Westchester county, where luncheon was served at 1 o'clock and the return trip was via New Rochelle and the Boston Post road.

It was the original intention to run to White Plains, but, on account of the rain, it was deemed inadvisable.

Fix Badger Tour Route

Many Dealers Will Enter, as Demonstrating Is Permitted, and Many Cars May Be Sold

Richest Sections of Wisconsin Are to Be Traversed

MILWAUKEE, WIS., June 18—A route of approximately 650 miles has been selected by the executive committee of the Wisconsin State Automobile Association for the running of the third annual Wisconsin reliability tour for *The Sentinel* cup, a sweepstakes, and the Emil Schandelin trophy, for private owners, on July 15, 16, 17, 18 and 19, 1912. The run will start and finish at Milwaukee. Application for a sanction has been made to the contest board of the A. A. A. and entry blanks will be issued within a few days.

Grade 3 rules of the A. A. A. will govern the 1912 tour, instead of grade 1 rules for the professional or trade class as for the first two runs.

The richest sections of Wisconsin will be traversed by this year's tour. The territory included in the route lies in southern and eastern Wisconsin, and for the first time the tour will not touch the great northwestern part of the state.

Under grade 3 rules the contesting cars will be permitted to demonstrate as much as desired in towns and cities along the route, so long as they complete a day's run on the schedule time. Cars will be checked out automatically in the morning. At night controls evenings may be spent in demonstrating, so long as observer is present. The running time will probably be not more than an average of 10 miles per hour, making it possible for entrants to make lengthy stops en route to talk business with agents or buyers. The average day's run is only 130 miles.

The first day's run, July 15, will be from Milwaukee to Beloit, passing through Racine and Kenosha, well known motor industrial centers; Burlington, Lyons, Lake Geneva (noon control), Elkhorn, Delavan, Clinton and South Beloit.

The second day's run, July 16, will be particularly profitable to sellers of cars. From Beloit the route is to Janesville, Milton, Whitewater, Fort Atkinson, Jefferson, Lake Mills, Watertown, Marshall, Sun Prairie to Madison (noon control), the state capital; thence to Middleton, Sauk City, Prairie du Sac and Baraboo, night control. Baraboo is the home of the famous Ringling Bros. circus interests.

On the third day, July 17, the tour will pass through the vast water power interests along the Wisconsin river, from Baraboo to Delton, Kilbourn City, Cheney, Lewiston, Portage, Wyocena, Rio, Doylestown, to Columbus (noon control); thence to Beaver Dam, Horicon, Mayville, Theresa, Lomira, noted agricultural communities; to Byron, Fond du Lac, Can Dyne and Black Wolf to Oshkosh, night control.

A country that has already been touched by previous tours will be traversed on July 18, the fourth day, from Oshkosh to Neenah-Menasha and Appleton, the paper mill centers of the West; Hortonville, New London, Bear Creek, Clintonville (noon control); thence to Embarrass, Shawano, Bonduel, Finnegan and Green Bay (night control).

The home run on the fifth day, July 19, is from Green Bay to Two Rivers and then down the west shore of Lake Michigan, which comprised the first day's trip last year. The tourists will pass through Manitowoc, Cleveland, Sheboygan, Sheboygan Falls, Cedar Grove, Port Washington, Grafton, Cedarburg, Thiessville, Brown Deer and finish at Milwaukee.

The tour passes through twenty-five counties and touches 125 towns and cities. It is conservatively estimated that 300,000 people will be directly interested in the tour and see the cars go by.

Some Points on Tire Use

Spare Tubes and Casings Often Receive So Little Care That They Are Worthless When Needed

Peculiar Destructive Explosion of Inflated Spare Tire

A NUMBER of things may be said regarding the care of spare tubes and envelopes. While many may think this a matter of small moment, it is as important a consideration as any in connection with the tire. Of what value is the extra casing or shoe if, when it is needed, it is found to be in as bad condition as that which must be replaced?

Never carry envelopes or shoes uncovered so that they are exposed to light, to temperature variations and to oils and grease. Very strong light, such as sunlight, has a tendency to make tires brittle so that they will crack in places. This at the same time takes away their elasticity. Tires, when stored by the man who knows, are placed in dark rooms where the temperature is kept as nearly constant at 50 degrees as possible, for temperature variations age them prematurely.

Metal and leather tire trunks are to be strongly recommended as the best protection possible for the extra tires. Often shoes are seen on the roofs of limousines or other closed cars, with no protection whatever. In such a position they get the full effect of all the elements to a much greater extent than they would even if uncovered and mounted at the side or the rear of these cars. In such exposed positions the substantial tire trunk is almost a necessity.

The inner tube receives more attention, perhaps, than does the envelope, but even then it is treated shabbily. How often is the tool-box opened only to find that the extra tube is reposing among the tools—the worst possible place for it! Tool boxes are usually damp; there are rusted spots on the tools to come in contact with the rubber, and, above all, the tools are sharp and chafe the tube.

Tubes should be carried in waterproofed cloth tire bags, which can be purchased from the automobile supply dealer for a nominal sum, and they should be used by all means. Place the tubes in these bags and put them where they will not be damaged by the jars of the road. In the touring car a good place for the tubes is in the compartment under the rear seat, unless a special tire trunk is carried.

Inner tubes often come in cardboard boxes. These afford ample protection while they are stored on the dealers' shelves, but not when placed in the car. The cardboard is apt to get wet from contact with water, oils or gasoline, and such dampness is to be guarded against. Then, too, these frail cardboard boxes are easily pierced by sharp tools. But the greatest trouble of all is that the tube is likely to be badly worn and damaged from constant chafing against the sides of the box, which, of course, should be avoided.

Using Deflated Tire Is Costly

Never drive a car on a deflated tire. Often the automobilist is tempted to run to a garage when he has a flat tire, in preference to repairing the damage on the road. But this will prove to be a very expensive proceeding, for it is sure to work very serious injury to the tire. The envelope will rim cut, or it will have its sides broken down, or both. Either of these renders the shoe of little further value. A flat tire when rolling along under the weight of the car, and between the rim and the pavement or road, is subjected to the severest sort of rubbing, grinding and crushing, and there is no envelope yet made which will withstand such gruelling treatment.

It is far better to remove the envelope entirely from the rim

and to drive slowly with no tire at all than to risk the consequences of running with it deflated. This should be the procedure if it is found impracticable to repair the leak on the road. In connection with running on the rim, it is a good plan to wind it with a heavy rope, such as is carried by most drivers as a tow line.

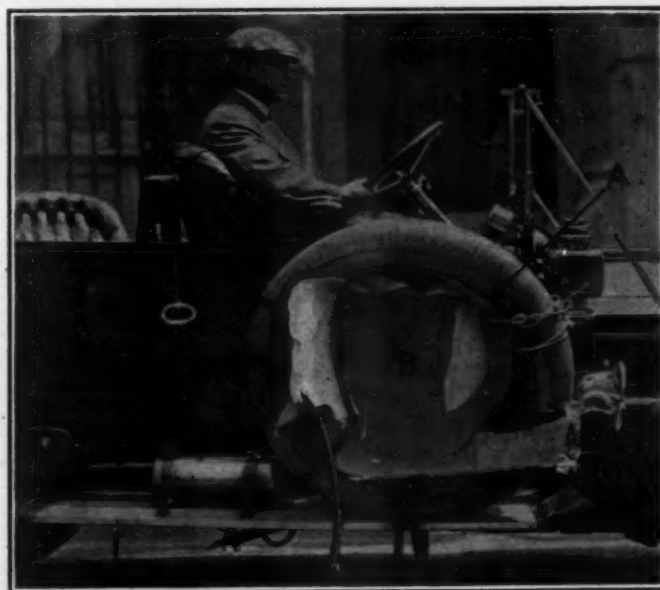
Blow-outs are often the result of sand blisters. These are caused by the working of sand into cuts in the envelope. This sand gets between the rubber of the tread and the fabric and separates the two. Such blisters or sand boils become gradually larger, until they eventually so weaken the fabric that it cannot withstand the air pressure from within. When such a blister is discovered it is most advisable to open it at once and cut away all sections of the tread which have become loosened. The opening should then be thoroughly washed out with gasoline in order to eliminate all foreign matter, after which a patch should be vulcanized over the hole.

Peculiar Spare Tire Blow-Out

That the driver never knows when a blow-out will occur was recently demonstrated in a peculiar accident which happened to a large touring car. This machine was being driven through the streets of New York under ordinary conditions when one of the spare tires blew out with a loud report, injuring the driver's foot and completely wrecking the tire trunk, as shown in the illustration below. The tire was the outer of the two carried, both being mounted on demountable rims for quick attachment to the wheels. The inner tubes were partially inflated, the pressure carried being perhaps 10 pounds below that which would be used when the tires were mounted on the wheels.

The explanation of the unusual accident is simple, yet it is no doubt one of the first of its kind to be recorded. Referring to the illustration, it will be noticed that the bead is damaged at A, the point at which the shoe slipped from the rim. The jar of the road and the pressure within the tire were responsible for this, and the inner tube being thus exposed, a blow-out was inevitable. The force of the explosion spent itself on the tire trunk B, nearly demolishing it. At the same time, pieces of wood from the back side of the trunk were driven in, striking the driver's foot and injuring it slightly.

Such an accident might have had more serious consequences, and is a strong argument in favor of the carrying of spare tires in the rear of the car. While very unusual, it is nevertheless a possibility which should be guarded against either by the carrying of very low air pressure or by very careful inspection of the rim fastenings before beginning the run.



A curious spare tire blow-out which was most destructive

Communications from the Manufacturer

Commercial Testing of Motor Car Bearings—Some Comments on Present-Day Truck-Selling Methods—Dear Gasoline Makes Our Light Cars Popular Abroad

UNTIL very recently the physical and chemical laboratory, as such, was unknown save in educational institutions or among firms whose chief concern was the making of specific tests as required by their clients. Gradually, and as a development in the commercial production of modern luxuries as well as necessities, there has come a new order of things. The manufacturer of complete automobiles or parts thereof formerly bought steel; today he demands steel of fixed and known chemical content as well as of definite physical characteristics. Not only so, but in order that all uncertainty be eliminated he finds it necessary to equip his own works with a laboratory all properly manned in order that incoming material may be constantly tried and checked as to agreement with his specifications. Only in this way is his product steadily maintained up to a standard once established. Still another function of this same department is, however, to assist the purchasing agent or designing engineer in the selection of such raw material or completed parts as may best be suited to the purpose in hand. This is, of course, accomplished by the preparation of dependable, comparative data. The fact that the data thus obtained is today considered most valuable is evident from the wide use made of it as well as from plans for the extension of the scheme now in process among some of the largest concerns connected with the automobile industry.

If there is one part of a car more than any other that deserves attention it is, perhaps, the small but important bearing. There are three fundamental types of bearings, plain, ball and roller. Each type in turn has several modifications, either in principle or detail of manufacture.

The question before the purchaser, is, "Which of the many bearings offered is best suited to my needs?" Without a doubt the men most fitted to answer that question today are the experienced makers of bearings. The more practical and business-like way is to arrange a series of tests and thus obtain a set of data applied to one's own personal needs and upon which at least a certain amount of value can be placed. Even these results should, however, be tempered to a certain extent by the experience of wide use and by discussion with such authorities as may be available.

Three Load Tests for Bearings

A bearing undergoing laboratory test may be subjected to any one of three kinds of load, radial load, thrust, or a series of equal or unequal shocks, or any combination of the three. Plain or line bearings are usually not subjected to any test save that for mechanical efficiency, or ratio of power input to power output. The automobile manufacturer is usually, however, not so much interested in fine distinctions of theoretical efficiency as in the question of durability, ease of lubrication, absence of noise, etc. Machines to test these qualities are designed to accommodate any size of roller or ball bearing with but slight modifications, and such bearings can then be subjected to a varying radial or thrust load at any desired speed. Such a machine, used to test Hyatt roller bearings, is illustrated herewith. The position of the center bearing C is fixed, Fig. 1, and to it the load is directly applied by means of the screw S, lever

L and links L₁, as shown. The ratio of the lever arm is 6 to 1, or 21 inches to 3 1/2 inches, so that any reading on the scale beam B, used to indicate loads, when multiplied by 6 will give the actual radial load on the center bearing. The use of a scale for this purpose makes it possible to keep the load constant by means of the balanced beam. It also makes it readily possible to detect the wear in all the bearings, as such wear will cause the beam to drop in the event it has once been balanced under load.

In order definitely to confine this wear—and consequently the entire test—to the center bearing it would be necessary to use for the end supports bearings, C₁ and C₂, of abnormal capacity for the duty involved. If, on the other hand, the test is to be made on all three parts they should be of equal size and capacity, in which event the value of the load on the center bearing C can be proportioned between the two outer in any desired ratio, simply by shifting the position of their supports with respect to the bedplate P. The greater number of tests run on this particular machine have assumed a 100 per cent. overload on the center bearing with this equally divided between the others.

If it is desired to test for thrust, same may be applied through a bellcrank, D, Fig. 1, and attached weights W pressing against one end of the shaft, Fig. 2. A modification of this would be to reverse the bellcrank and use a second screw and scale for applying the load; the center and one end bearing being allowed to float, all thrust is imposed on the other end bearing.

The value in any set of figures such as this article would refer to lies in its being the average obtained from a reasonable number of tests performed under similar conditions. Further, it must be remembered that no bearing probably ever gets a load in actual automobile service as great as it might be subjected to on laboratory test. In order to complete a fair number of tests it would seem reasonable to use a fair overload and then run continuously, at maximum working speed, until destruction, as time is a function of the life of any bearing and destruction is the point at which it ceases to be useful to the consumer. The

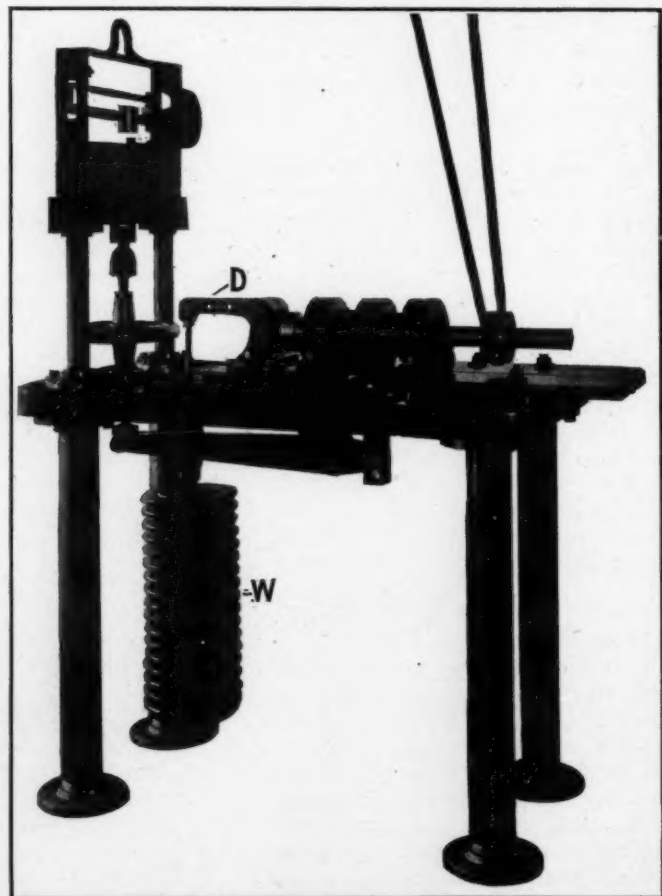


Fig. 1—Machine set up for testing end thrust

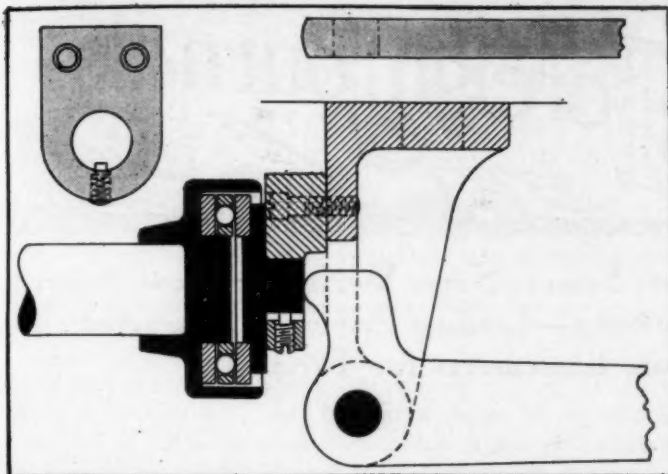


Fig. 2—Sectional view through bearing, showing mounting

amount of overload to use may readily be chosen consistent with time at one's disposal by trial tests. More difficult is it to determine just what shall be considered actual failure. In some cases breakage of parts will determine it without question. Occasionally an excessive heating of the bearing will indicate that something is wrong. For many trials it will be found necessary to decide on a definite amount of wear, say .010 or .015, providing suitable means for measuring during operation, and consider the test completed when that point is reached. To avoid the additional mechanism required for indicating this wear during operation, arrangements can be made to run the test in short periods, stopping at the end of each for examination.

It is generally conceded to be satisfactory for purposes of comparison to include only radial and thrust tests, the latter in connection with such bearings as are intended to take thrust. If, however, for certain reasons it seems desirable to run shock tests, a mechanism can readily be designed which will apply and remove the load alternately.—H. S. LANE, Hyatt Roller Bearing Company.

Truck-Selling Methods That Harass

THE poacher in the motor truck trade is comparable to what the legal profession is pleased to term the "ambulance chaser." There is no consideration of business interests in either case—honor, courtesy, truth and the struggling victim, all are forgotten in personal self-interest.

A manufacturer or dealer who will allow his representatives to deliberately undermine the permanent foundations of a business to a point where the structure will fall is not only digging its own grave, but is threatening the foundations of society, business industry and general prosperity. The poacher recognizes no fixed business rules, principles or policy. He will sell trucks at cost or less than cost, give an agreement to maintain the same in regular guaranteed daily service for 5 years at cost or less than cost; give 7 years' guarantees or offer other inducements without any idea of carrying them out, just to say that he is doing business. In other words, he is always fooling himself, and it has been my experience that a poacher has never made a success.

This would not be so disastrous if the unfortunate results were confined only to the poacher, but while he is experimenting to see how much business he

can do without any idea as to cost or profit, he is doing a great deal of harm to the general trade. Concerns which are operating on a basis of fair dealing, and who expect to stay in business, pay 100 cents on the dollar and earn a fair dividend for stockholders are hampered and hindered in their efforts to maintain a proper business standard.

It seems necessary every year to kill off a bunch of these poachers, but there always seems to be some one willing and anxious to try the same experiment in place of the "dear departed." In all probability they will have to learn their lesson by bitter experience, and those of us who have learned the lesson, been cured, or brought up amid proper business surroundings must pay the cost of their education.

The remedy lies in the hands of the motor truck builders. Proper organizations to weed out and eliminate the unbusiness-like and unprofitable methods that are creeping in would go a long way toward clearing the atmosphere and giving each dealer and manufacturer a chance to make a fair profit. Until such association is formed there will be "wailing and gnashing of teeth" as a result of the poacher methods.—ROLLIN W. HUTCHINSON, JR., International Motor Company.

Our Light Cars Popular Abroad

AMERICANS are more fond of touring than the people of Europe. Furthermore, the average European car could not stand a run like that between New York and Chicago.

In England and on the Continent the majority of people who own an automobile or are in a position to buy one do not care for extensive travel. In spite of the fact that the roads between London and Edinburgh are so good that a car from the United States can make the entire distance on high gear, the route is not used much for through travel and the English people do not derive much enjoyment from their roads.

Gasoline in Europe sells as high as 40 to 60 cents a gallon, and this is probably one of the main reasons why there is not more touring among the owners of motor cars. The many light cars offered by European manufacturers are designed to afford economy in gasoline consumption and are not powerful enough to make possible long tours over hilly roads. It is the modern, low-priced car exported from this country that is demonstrating to Europeans the possibilities of motor car construction.

The interest of the English, French, German and Italian motor car enthusiasts in the automobiles sent over from the United States is greater today than ever before. The worth of our low-priced cars has won a recognition that will eventually mean the increase of touring among automobile owners and a general increase in the number of people owning cars.—J. E. LAMBERT, Regal Motor Car Company.

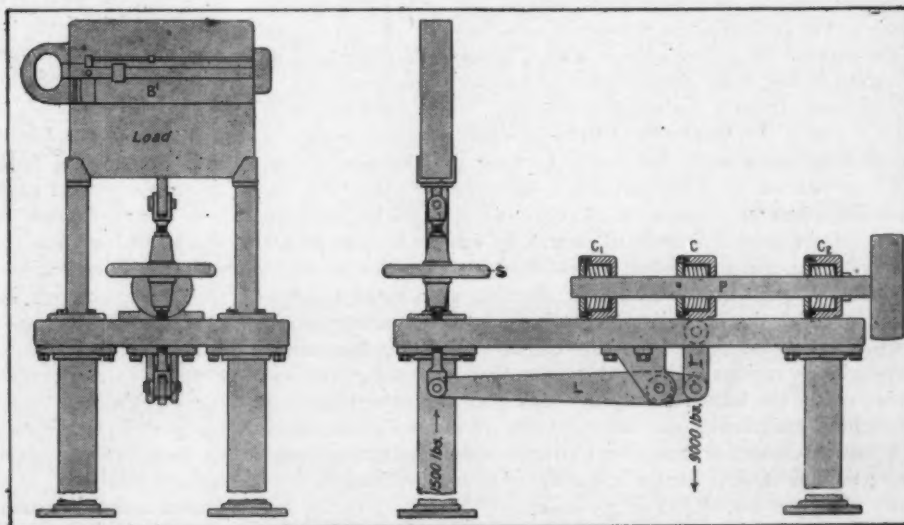


Fig. 3—End view and elevation of machine for testing automobile bearings

Digest of the Leading Foreign Journals

Search for Simple Carbureter Brings Out Smart New Wrinkle—New Spring Rebound Brake—A Pointer on Tire Economy—Leading Principles Extracted From European Trials of Motor Implements for Farmers

NEGLECTED Cause of Tire Wear—In the many treatises which have been written on the causes of excessive wear of tires, one condition which especially affects the front tires has escaped mention, or else the effect of it has erroneously been described as relating to the rear tires. This condition is the obliquity of the rear axle. If any one finds that his front tires wear faster than should be expected, he would do well in measuring carefully the alignment of his rear axle, to see whether or not it is at right angles with the axis of the vehicle. It has usually been assumed that if the alignment is imperfect the vehicle will nevertheless progress over the soil in the direction of its axis and that it is the rear tires which will scrape a little. Such a movement is impossible, however, as is readily seen by drawing a diagram showing the rear axle turned to one side. The vehicle in that case will turn around the point of intersection—far out to one side—of the front and rear axles, and the wear of the rear tires will be perfectly regular. But what will happen is that the driver, who has no desire to turn, will counteract this natural movement of the vehicle by instinctively turning the front wheels until they are approximately parallel with the rear ones, and then the vehicle will proceed along the road while its axis is turned at a small angle with its direction—as a dog trots. If the front wheels remained truly parallel under this condition no trouble would result, but with the steering system universally in use it is impossible to turn the front wheels and keep them parallel. When turned they diverge a little to the front, and the position which the driver will give them will be one in which both wheels are turned slightly outward, the direction of progress dividing the small angle between them. The results are then exactly the same as when the front wheels are mounted wrong in the first place or when the steering rod has been bent; that is, the steering is insecure and wobbling, speed appears dangerous, and above all there is a certain percentage of scraping instead of rolling movement of the front tires in relation to the ground and consequently excessive wear. While the misalignment of a rear axle is always necessarily small and the twisting of the front wheels is correspondingly inconspicuous, all know how strongly the smallest disorder of the steering mechanism affects the wear of the tires, and the situation in this respect is the same when the rear axle is awry. The cause of excessive wear of the tires operates in both cases all the time, and thereby it becomes important. In chain-driven vehicles misalignment of the rear axle may of course be due to uneven adjustment of the chain stretchers; in shaft-driven vehicles to poorly adjusted lateral driving struts, to skewing of a central thrust-strut or tube, due to a lateral shock, or to the weakening of a vehicle spring on one side in case the drive thrust is transmitted through the springs. Habitual overloading of a vehicle on one side may in the latter contingency also have the same effect, the stretching and shackle-movement of the overloaded spring turning the axle more or less, though the modern flat springs minimize this effect.—A, Contet in *La Vie Automobile*, June 1.

New Kink in Carburation—According to practical trials of the Compound-Vergaser (*Vergaser* means carbureter) in Ger-

many, a very simple little innovation in nozzle-action has been proved very effective for obtaining fuel economy as well as very satisfactory responsiveness under strongly throttled suction from a float-feed carbureter of the simplest design, and this at the same time as improvements of carbureter design in general almost uniformly run to construction with more than one jet, one of which operates as a fuel valve. The innovation referred to consists simply in a small curved tube with a bore of a few millimeters in diameter which connects the outside atmospheric air with the interior of the gasoline nozzle slightly below the float chamber level. The effect is that even the slightest suction upon the gasoline in the jet draws in some air which forms bubbles inside of the nozzle, while the gasoline fills the intervals among the bubbles, and when this mixture of air and gasoline leaves the nozzle the bubbles burst in the rarefied air of the carbureter and the induction pipe, so that the fuel is very thoroughly atomized. Through the formation of bubbles another purpose is served, besides that of forming a column of mixed air and fuel which may be drawn out promptly even when the motor is running idle under the maximum of throttling and which is easily vaporized. The weight of this column is so small that its momentum under all circumstances remains insignificant. It does not continue to flow after the suction has ceased. And, in fact, the air in the little auxiliary air tube acts as a brake. The phenomenon which is observed with most carbureters of more complicated design, namely, that the fuel trickles down the outside of the nozzle and goes to waste in the short intervals between suction strokes of the hard-working engine, is here avoided, and a notable economy in fuel consumption is said to be the demonstrated result. It is also asserted that the device supplies just the right mixture at all piston speeds, but if this assertion holds good the accomplishment must evidently depend upon a very happy hit in choosing the height at which the auxiliary air tube enters the nozzle, and it may not be easy to duplicate the same results for motors of different sizes requiring nozzle openings of different diameters.—From *Der Motorwagen*, April 30.

Motor Tools for Farmers—Intensive cultivation of all available agricultural lands is at present felt to be an economical necessity in most parts of Europe in order to return a satisfactory yearly interest on the current land values, but the great scarcity of labor in country districts, which is the result of emigration, colonization and the universal "trend toward the city" accompanying industrial development wherever it has been pronounced, has rendered it extremely difficult for farmers to follow up their desires with practical action. Under these circumstances a movement for the employment of motor power in the working of tools of cultivation is assuming large proportions, and the periodicals catering to the motor industry, seeing an immense new field opening up, are full of accounts of numerous trials of motor ploughs, cultivators, harrows, hoes and special weeding machines for the sugarbeet fields and the potatoes, most of the trials being conducted under the very highest patronage and the auspices of agricultural societies, automobile

clubs and engineering authorities. The difficulties in applying the motor principle to agriculture are, however, proving even greater than anticipated. The high prices of the machines and the uncertainty of their economy under actual working conditions prevent practically all sales. If the results of the experience gained so far may be summarized in a few words, in accordance with the numerous different reports, such a summary might be about as follows: (1) All the old tools of farming were evolved for human and animal power; they should all be redesigned for motor power; entirely new movements in turning and stirring the soil are required; (2) the work of the tools in the soil should itself be utilized to help moving the machine over the ground (the tools moving from front to rear in the soil); only in this manner can good traction be reconciled with the small weight and cost which are indispensable for economy, and (3) the motor power of the machines must be made available for economical use on the farm all the year round and must be interchangeable from one tool to another.

Frost Protection for Cylinders—When the cooling water is left in the water jackets of an internal combustion motor while the latter is not working, and cold weather sets in, the freezing of the cooling water may, as very generally known, burst either the jackets or the cylinders. Jackets have been made of corrugated copper which would expand or break loose at their joints with the cylinders if the water in them congealed, but even under these circumstances the repair of the damage was expensive; and the construction was not robust in the hands of the general public. It was mainly used for automobile racing cars with thin-walled steel cylinders. In the agitation for introducing motor machinery for agricultural work which is carried on in France, Germany and England at the present time, the question of protecting the motors against the dangers of frost has again come to the surface, considering that this danger is one which is especially acute if the motor is in the hands of persons who are not accustomed to the care of fine machinery and if the motor is liable to stand idle for uncertain periods. At the latest general agricultural motor show in France, Henry Bauchet exhibited his method for reducing this danger to a minimum of importance. It was shown in connection with one, two and four-cylinder motors. These were of the block type and the jackets took the form of cylinders surrounding the combustion chambers, the axes of these jacket cylinders extending horizontally and transversely. The circular disks closing the ends of these cylinders were removable and were formed with weakening grooves on their inside acting like safety fuses in electric circuits, to protect all other parts; that is, if the water froze, the disks would break along one of the grooves and a fresh disk would remedy the damage.—From *Technique Moderne*, May 15.

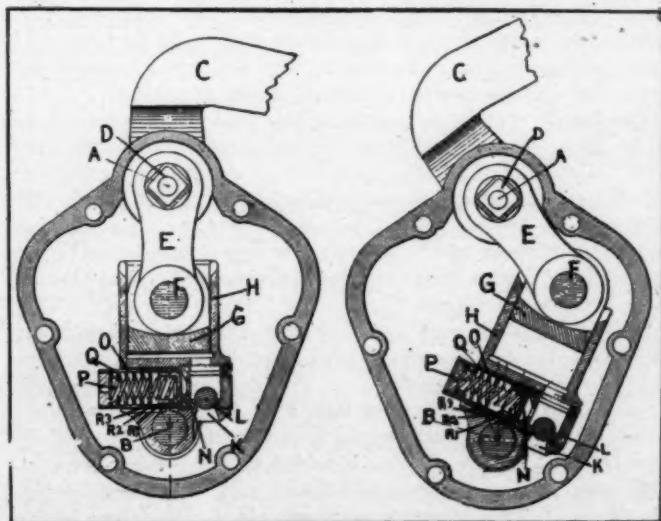


Fig. 1—Hydraulic brake for the rebound of springs

Hydraulic Shock-Absorber—The accompanying illustration of the C-R shock-absorber shows a construction by which exactly the same is accomplished as by the Derihon shock-absorber, which was described and illustrated in *THE AUTOMOBILE* of June 13. Both allow free action of the vehicle springs in both directions from their state of load-carrying equilibrium, and both of them brake and retard the reaction of the springs which takes place after they have been either compressed or extended. The Derihon device may be adjusted from the outside and without dismounting the mechanism, so as to fit its action somewhat to the varying requirements arising from variations in load, road quality and vehicle speed, and this means is practiced that it may be bought, fitted to a vehicle and adjusted by the user. Whether the C-R mechanism has any compensating advantages may be judged from the following or perhaps only by a practical trial. The casing is heart-shaped, made in halves bolted together, and is secured to the frame reach by two bolts, which may be identical with bolts A and B in the illustration, Fig. 1, though the description is silent on this point. The forked arm C connects the mechanism with the vehicle axle in the customary manner and is keyed upon the squared ends of the fixed shaft D which is apparently mounted upon the bolt A with the necessary provisions against leakage of the liquid with which the casing is filled. The arm E is mounted upon the same squared shaft D inside of the casing, so that it must turn when the bolt is turned. Its other end is journaled upon the pin F which is integral with piston G in the cylinder H. The body, of which this cylinder forms a part, is journaled upon the fixed shaft B so as to oscillate upon it whenever the arm E is caused to swing to or from its rest-position, shown to the left in the illustration, every movement of E causing the piston G to move in or out in the cylinder H. Whether the vehicle spring is compressed or extended, arm E swings away from this rest-position, and the piston draws liquid into cylinder H through the opening K, the ball L rising to allow the liquid to pass. But when arm E swings back, pushing the piston back, the ball L obstructs opening K, and the liquid pressure takes effect against piston N, displacing it in cylinder O against the resistance of springs P and Q, which are mounted so that spring Q does not come into action unless piston N is displaced more than ordinarily; that is, unless the vehicle receives an unusually severe shock. The displacement of piston N discloses successively a series of apertures R₁, R₂, R₃ in the wall of cylinder O, through which the liquid may escape under considerable friction, this friction added to the spring resistance constituting the retarding effect of the mechanism upon the vehicle spring reactions.—From *Revue de l'Automobile*, No. 98.

Ball-Bearing Worm Drive—French patent No. 436,024 to the Malicet et Blin company relates to a worm drive in which the threads of the worm bear against steel balls in the enlarged thread of the nut. The row of balls is made continuous by channels from the ends of the nut thread to a conduit in the body of the nut paralleling the axis of the mechanism. When the drive is intended to transmit power whether the worm is rotated in one direction or the other, the nut contains two rows of balls, one above and the other below the worm thread, and there is then a return conduit for each of the rows.

Safeguarding the Compression—British patent No. 28,788, class 122 to the Daimler Motoren Gesellschaft of Stuttgart, Germany, relates to a piston ring provided with a button at some point between its free ends and a piston with a recess to receive the button.

JUDGING from the dimensions of seats and steering wheels in cars of different power, some designers seem to think that the corpulence of the driver grows with the bore of his cylinders.—A. Contet in *La Vie Automobile*, June 1.

Notes from Evolution of Cheap Aluminum

European Chemists Show New Way to Low-Cost Manufacture of the Light Metal and Fertilizer Industry Grasps the Chance—Bright Prospects for Improved Alloys at Reduced Prices—Data of Present Manufacture

WHETHER it is wood or steel which shall eventually be replaced by cheapened and toughened aluminum appears to be one of those questions which students of popular mechanics have not yet been able to answer to their own satisfaction, and meanwhile the logic of events seems to give an evasive answer to the conundrum by substituting aluminum, such as it is, more widely for copper and tin than for any other materials. Its use in automobile construction has been limited almost entirely to crankcases and gearboxes, and its superior fitness for these purposes remains under dispute. Rolled plates of aluminum, magnalium and kindred light-weight alloys for the panels of automobile carriage bodies have passed through ups and downs, but wood and steel are more than holding their own, and new plastic materials are beginning to bid for the work as well. Nevertheless neither the popular nor the professional engineering interest in aluminum is waning. The fact that considerable progress is on record in the matter of strengthening aluminum and otherwise improving its properties—for foundry work, die-casting, rolling, forging, soldering and welding it, and for making it hold on to a coat of paint or enamel—has kept this light and non-corrosive metal in the limelight, and the unlimited abundance of the raw material from which aluminum may eventually be produced, if only the means are devised for doing it economically, points so strongly to some providential plan for the equally unlimited use of the metal as such, that every new step in the evolution of processes which hold out the slightest promise of making it suddenly as common as the clay which contains it and as cheap as logs in a lumber camp, is watched with the keenest attention in wide circles. For all consumers who still must continue to pay twice as much for a pound of aluminum as for a pound of copper, it seems almost a mockery that at the same time large financial interests are organized to throw enormous quantities of aluminum nitride upon the market for fertilizing purposes, being able to produce this compound, with its high percentage of aluminum, at a price competing easily with the quotations for the ordinary diggings from the phosphate beds of Florida, Tunisia and Tripoli. The mockery is not malicious or unmitigated, however; for it seems that it was this fact—the possibility of producing nitride of aluminum cheaply—which aroused the keenest specialists in this line to renewed efforts at producing the metal itself at a correspondingly low cost, and that these efforts have been rewarded with such remarkable results that, if aluminum does not drop to one-third or one-fourth of its present price in the course of one or two years or sooner, it will be because the French, American and German producers pool their issues.

Results Due to Electric Furnace

While many features in these advancements are kept secret, it is plain that they have been mainly due to the electric furnace, particularly in the electric resistance furnace, and the great convenience it offers for obtaining very high temperatures and controlling them within narrow limits. The large establishments maintained in Norway, the Cape Colony, Switzerland and in France for separating nitrogen from the atmosphere by means of alternating electric arcs and other kindred modern methods, all of which necessitate a comparatively ex-

pensive subsequent mixing with a binder substance, also naturally stimulated competitive efforts for obtaining the nitrogen in other ways and especially for obtaining it direct in suitable solid admixtures endowed with sufficient affinity to prevent the return of the nitrogen to its gaseous state but yet carrying this fertilizing, plant-nourishing substance in a grasp so light and delicate that the growing crops would have no trouble in loosening it and taking possession of their share, the nitrogen. It was aluminum nitride which met these requirements best because the electric resistance furnace would produce it from an inexhaustible if not ubiquitous raw material. The thought of getting the aluminum more cheaply than before by way of this preliminary process was secondary, but now looms up as probably the more fruitful and important of the two. The best exact knowledge on the whole subject and the most securely fortified patents seem to be held on a number of hands, however, and a game of give and take, of exactions and concessions, between German and French patentees, French owners of bauxite mines and those controlling the cryolite supply, has been in progress for the purpose of organizing industrial activity in the production of aluminum by the new methods.

Outline of the Present-Day Methods

In a communication to the Society of Civil Engineers of France, the well-known metallurgist Léon Guillet gives a synopsis of the recent advances relating to other metals than iron and steel. It was printed in the *Bulletin* of the society for October, 1911, and, while the commercial organization of the aluminum nitride interests had not been consummated at the time, some of the information offered is of interest. The only method, says the author, which is used industrially anywhere in the world for producing aluminum depends upon the electrolysis of alumina—chemically pure clay—placed in solution in a bath of molten cryolite. It gives a commercial metal at first throw, and this is an indispensable feature, because the refinement of an impure aluminum is impracticable by reason of its tendency to oxidizing. The ore furnishing pure alumina most readily is bauxite, and it is economically essential that it should be treated near the place where it is mined. The electrolytic process depends upon cheap power, preferably water-power.

The Deville method for applying this principle has given way to the Bayer method, which in summary comprises the following steps: Crushing the ore; roasting it in an Oxland furnace at 700 degrees C.; pulverization; lixiviation in a soda solution of 1.45 specific gravity; filtration under pressure; precipitation under the influence of the alumina left over from the preceding operation; filtration and washing; drying and calcination at from 900 to 1,200 degrees C. in a reverberating furnace.

In the electrolytic part of the process there are perhaps some secrets relating to the composition of the cryolite bath. It must be of lower specific gravity than the aluminum to be precipitated, so that the latter may be tapped off from the bottom while protected against oxidation by the molten salts above it. Usually 20 to 25 per cent. of alumina is added to the cryolite for each melt; then solvents to lower the fusion point, especially fluoride of calcium. The furnaces used are electric with conductive hearths and several electrodes. Originally the sole was heated

externally by other means, but many losses were then sustained, owing to the molten masses breaking through. By the adoption of electric heating and a number of minor economical refinements in the process outlined, the cost of production has been gradually reduced. Considering the rates at which the substances of the bath may be used over and over again in the cycle of operations, the present cost of manufacturing 1 kilogram of aluminum in France may be specified as follows:

2 kilograms of alumina derived from bauxite.	.60 franc.
100 grams cryolite at .60 franc per kilogram.	.06 "
Anodes, 900 grams at 35 francs per kilogram.	.30 "
Current, 31 kilowatt-hours at .006 franc.	.19 "
Labor	.30 "

Total for 1 kilogram aluminum..... 1.45 francs.

More precise and detailed figures on the methods and cost of production under French conditions are given by Lodin in *Annales des Mines*, 1909.

Referring to the recently discovered methods for producing aluminum nitride, Mr. Guillet expresses the opinion, which seems to be shared by all the specialists, that these are destined to prove of the greatest economical importance, because they give not only a valuable fertilizer, but also aluminate of soda as a by-product which need only be decomposed by means of hydrated alumina in order to yield commercially pure alumina. There is evidently, he asserts, in the industrialization of aluminum nitride a point where the reaction on the manufacture of metallic aluminum will become decidedly interesting. The processes followed are not yet known, he says, excepting that by exposing bauxite to a current of atmospheric air in an electric furnace at 1,800 to 1,900 degrees C. aluminum nitride is obtained and the latter is decomposed in an autoclave (closed vat with vent valve) in the presence of a soda lye and under conditions yielding (1) ammoniac, which is readily converted into the sulphate of nitrogen required for fertilizing purposes and (2) aluminate of soda, giving a raw material for the aluminum production.

Alloys and Special Uses of Aluminum

Additional data on aluminum nitride and its possibilities are referred to later, being derived from other sources of information, but what Mr. Guillet has to say of "duraluminum" is of more direct interest in the automobile industry, as this strong and yet very light alloy of aluminum has been widely looked upon as a very promising substitute for steel in places where lightness and rigidity should be combined, as, for example, in connecting-rods, and, of course, also, on general principles, as an improvement upon ordinary aluminum. This alloy obtains its name from being first produced at a large brass foundry at Duren, Germany; and the radical "dur," meaning hard, strong, happened to lend appropriateness to the combination of sounds. Two samples which Guillet received were found to contain, in addition to aluminum, the following components:

- (1) .53 silicon; 2.95 copper; .55 iron; 81 manganese.
- (2) .60 silicon; 4.06 copper; .67 iron; 1.47 manganese.

The figures obtained at the ordinary physical tests of these samples were surprisingly high, in comparison with those previously obtained from any other aluminum alloys. One of the samples gave a tensile strength of 36 kilograms per square millimeter, which is as good as that of most soft steels, an elastic limit of 7.5 kilograms, an elongation of 26 per cent. and a reduction of area of 47.5 per cent. The Brinell density was 81 and the shock resistance, by the notched-bar method, was 7.1. Annealing at 400 degrees C., however, reduced the tensile strength to 21.3, raised the elastic limit to 17.2 and lowered the Brinell density to 46. In both conditions the shock resistance was feeble, as in other alloys of aluminum and most of the copper alloys, and especially for this reason, comments the experienced metallurgist, it may be a little early to compare this substance with soft steel for construction work. He dwells at length upon the great strides made in rolling aluminum into aluminum foil, which can be made considerably thinner than tin-

foil and is replacing it for "chocolate papers," but this affects automobilism only in so far as it has been closely connected with similar progress in the pulverization of aluminum. The finest aluminum powder is the essential ingredient in a very valuable aluminum paint. It derives an extraordinary protective property from the fact that every powder unit is in reality a small scale, not more than 1-500 part of 1 millimeter thick, and these infinitesimal scales overlap while sticking closely one to another by virtue of the large clinging surface which they offer for the intervening binding-medium of the paint. Neither does this paint crack off by heat, the aluminum being susceptible of expansion and contraction without breaking. In France all the 5-liter gasoline cans are coated with this paint as a protection against rust. In the manufacture of aluminum powder great caution is necessary, however, as in its very fine quality it forms explosive mixtures with the air—like flour magnesium and coal dust—and these have been known to "ignite themselves." The factories, for this reason, are equipped with roofs of special construction which turn on hinges at slight pressure from within and allow the pressure created by a small or incipient explosion to dissipate itself without doing harm. The precautionary methods are said to have been so thoroughly perfected that the insurance companies no longer exact unusual premiums. To what extent the qualities which it is possible to incorporate in aluminum paint are found in the paint of silvery hue so widely applied to motors, exhaust pipes and mufflers, may be doubtful.

Exploitation of the Discoveries

According to Francis Marre in *Le Génie Civil* of May 11, the most important progress in the production of aluminum-nitride is due to the efforts of the *Badische Anilin und Soda-fabrik*, by whose process it is possible to produce it either from alumina or direct from bauxite (which is a hydrated oxide of alumina, $Al_2O_3 \cdot 2H_2O$) and in either case to have the nitride so stable that it will not lose its nitrogen in gaseous form by exposure to the atmosphere. The method of this concern also does not require the very high temperatures which are obtainable only in electric furnaces. It may be operated at temperatures from 1,500 degrees C. up, though the fusion point of alumina in an atmosphere of nitrogen is 2,020 degrees C. according to Ruff and Goecke (*Zeitschrift für Angewandte Chemie*, August 4). This result is attained simply by adding a small percentage of quartz, which is dioxide of silicon, or oxide of chromium or titanium to the mixture of alumina and lamp-black carbon, which is subjected to heat. The practical importance of this discovery comes in mainly through the fact that it permits the direct use of bauxite ore containing a considerable percentage of quartz, titanite acid and other oxides heretofore looked upon as impurities only. The details of this discovery are given in the French patent 418,425, which is published, for example, in *Revue de Chemie Industrielle* of January, 1911. Other specialists attach considerable importance to the methods discovered by Dr. Ottocar Serpek, of Paris, which are outlined in French patents 427,100, 427,110 and 430,822. One of these refers to the production of metallic aluminum.

A small trial factory has been erected by the *Société Générale des Nitrures*, at Saint-Jean-de-Maurienne, France, and has now been in operation for several months. According to a note in *Giesserei Zeitung* of February 15, this French company has licensed the syndicated French manufacturers of aluminum, operating under the name of *Aluminium Français*, to make use of the process it controls for the production of pure alumina as a raw material for the manufacture of aluminum, and the same privilege has been extended to the German aluminum factory at Neuhausen. The royalty exacted is graded according to the cost of producing the pure alumina under the different local conditions, especially the variations in the quality of the bauxite, but the data at hand leave it in doubt whether the process referred to is that of the Soda-Fabrik or Serpek's or perhaps a third one.

Letters Answered and Discussed

Tuning Up a Buick; Electrolysis for Sharpening; Differential Bearing Trouble; Rayfield Carbureter Adjustments; Noisy Chains; Home-Made Motor Rack; Cutting Down Oil Supply; How Many Miles from a Casing?

Points on Tuning Up a Buick

EDITOR THE AUTOMOBILE: I am putting in shape a Buick automobile and would like to know through THE AUTOMOBILE the exact piston clearance for running at top speed. I would also like to know what is the average expansion of a piston and the piston clearance to use for all-around commercial and pleasure purposes.

Cincinnati, O.

H. A. MIDDLETON.

—The piston clearance, that is, the clearance between the piston and the cylinder walls when the motor is cold, can be greater if the car is to be used for high speed purposes than for ordinary work. The reason for this is the greater heat of the motor under these circumstances than when the motor is used for touring, etc. You do not mention what the bore of your motor is and it is upon this that the clearance depends. A clearance of .01 inch at the top of the piston with .005 inch at the bottom is good practice. These figures are for ordinary work. For racing or other high speed work the clearance at the top of the cylinder may be about .002 inch greater.

The average expansion of a cylinder depends altogether on the bore of the motor and the conditions under which it is working. The hotter the motor is, of course, the greater is the expansion. The expansion of the piston is also different at the top and bottom. On a car having a bore of about 4 inches it should average about .004 inch at the top. By the top of the piston is meant that part which is above the rings.

Electrolysis for Sharpening

EDITOR THE AUTOMOBILE: Will you kindly tell me through the columns of THE AUTOMOBILE whether electrolysis has ever been used in the sharpening of tools in this country or abroad? Is the method of enough practical value to be considered important in a well-equipped shop or is it merely the dream of some impractical experimenter? If it is employed, on what tools is it most often used?

Springfield, Ill.

SUBSCRIBER.

—The method of which you speak has been tried in this country on several occasions. Barthel, of New York City, many years ago attempted an electro-etching method with partial success. The bath in this case generated its own current and a coating of mud was formed over the surface of the metal. This had to be wiped off very often, which rendered the process unsatisfactory. It was used on flat tools and milling cutters. Since that time practice in this direction has turned to the use of independent batteries with more success. Hall and Thornton, of Birmingham, England, have produced sharp points on metal rods by connecting them with the positive pole of a battery and putting the end to be sharpened in an acid solution which was connected to the negative pole. The work was pulled out of the bath very gradually, the rod becoming thinner toward the end. For ordinary shop work, however, the process is too slow and complicated to be satisfactory.

Differential Bearing Heats

EDITOR THE AUTOMOBILE: Would you kindly give me through THE AUTOMOBILE some information regarding the alignment of the driving gear on a shaft-driven runabout? On this little car we have had the best mechanic we could get and wrote the makers who answered that the two gears, the drive pinion and differential wheel, were out of line, causing the heating we mentioned. They told us it was a simple matter to align them if one knew how but we cannot find anyone who can remedy the trouble. The differential sounds coarse, as if it had no oil in it, and the driveshaft pinion bushing bolted to the front of the differential casing heats after driving about 5 miles. We removed this bushing and the shaft pinion and an expert mechanic said that the heating was not caused by abrasion nor tightness. We put them back, loosened the distance rods, put on a chain hoist and lifted the rear wheels from the floor. We then started the engine and allowed it to run a long time with the distance rods free. The bearing did not heat. We thought that, by setting the rods up so that they would be exactly as they were then, the trouble would disappear, but this made no difference. We then changed the lengths of the rods and, in fact, have done everything we can think of but the trouble still continues. The pinion gear on the end of the shaft wears on the forward part.

Millbridge, Me.

J. W.

—In a case of heating, the first thing to inquire about is the lubrication. You do not state whether or not this trouble developed suddenly, if the car is old or new, or if the trouble was noticed after a severe jounce; so that, in order to analyze the difficulty, the factor of lubrication must be considered. The grease cup on the bearing housing may not properly take care of the lubrication, owing to the fact that there is a reverse spiral

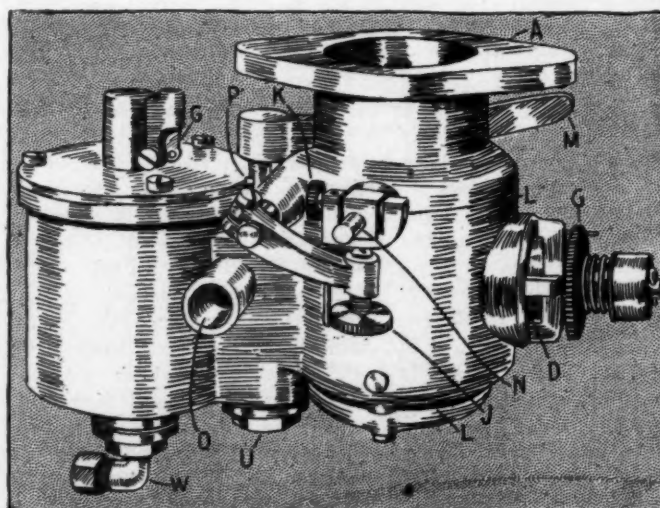


Fig. 1—Rayfield carburetor without dash control feature

on the shaft which screws all the oil away from one part of the bearing. This is the only reason, outside of absolute neglect, that the bearing should not be lubricated properly. If, on taking down this part, one end of the bearing is found to be dry, the shaft should be put in a lathe and turned rapidly while a piece of emery is held lightly against it and moved in the direction which is dry. This will create a spiral in the opposite direction and tend to draw the lubricant this way.

The second possibility is a sag in the axle. This would produce the effect you mention and can be cured by taking up strongly on the truss rods beneath the axle. The turnbuckles on these should be tightened as much as they will stand without stripping. If the heating is much more pronounced when the car is heavily loaded, this is probably the cause of the trouble.

Another frequent cause of the overheating of this bearing is the fact that the pinion is too closely in mesh with the differential wheel. This can be withdrawn slightly by unbolting the casing which holds the bearing to the front of the differential housing, and inserting between these two housings a gasket or washer of thick paper folded so that the two gears are drawn out of mesh for a short distance. It is very probable that, if the trouble is treated from all three of the angles outlined, it will disappear, unless the axle itself has been bent owing to a jar. This is likely to be the case if the trouble has developed only after the car has been in use for some time and has been used on rough roads.

Adjustments on the Rayfield

Editor THE AUTOMOBILE: I have a Rayfield carbureter with a dash adjustment. I concluded my car was getting too rich a mixture and attempted to readjust the carbureter. I cannot get results and I would like you to explain how to go about adjusting it. What relation have the other adjustments to the dash control? The carbureter is attached to a 1911 Fal-Car.

St. Louis, Mo.

B. E. BRADSHAW.

—When using the Rayfield carbureter, two things should be remembered: First, do not change the float level. It is set correctly at the factory and any changes made in this will throw all the adjustments out. Secondly, always prime the carbureter when starting but do this by a steady pull and not by jerking on the primer cord.

The carbureter should always be adjusted with the button on the dash down. The needle valve is then closed. Referring to Fig. 2, this is accomplished by turning the low speed adjustment screw shown at N to the left. When the arm U has just ceased to make contact with the cam, the needle valve is fully closed. Then turn the knurled screw N one and one-half turns to the right. Now open the throttle one-quarter. If the carbureter is not connected up, this is accomplished by turning the throttle lever D one-quarter of its full swing. Then start the motor. Close the throttle gradually with the motor running until the lowest steady speed is obtained, that is to say, the least speed at which the motor will run without danger of stopping. The low-speed screw should then be turned slowly to the left, one turn at a time, until the maximum degree of smoothness is obtained. If the motor does not throttle low enough, turn the screw in the stop arm to the left with a screw driver until the speed can be brought down as low as desired. This constitutes the low-speed adjustment.

The adjustment for high speed should now be made. Open the throttle slowly until wide open. If the motor should start to backfire at any position of the throttle, turn the high-speed adjusting screw O to the right, a half turn at a time, until the motor runs without a miss. If the motor should not backfire when adjusting for high speed, turn the high-speed adjusting screw O to the left until it does stand and then back to the right until it runs powerfully and smoothly without miss or backfire. Should the mixture appear to be a little lean and backfires result at medium speeds, or when the throttle is about one-fourth open, turn the air valve adjustment P to the right a turn

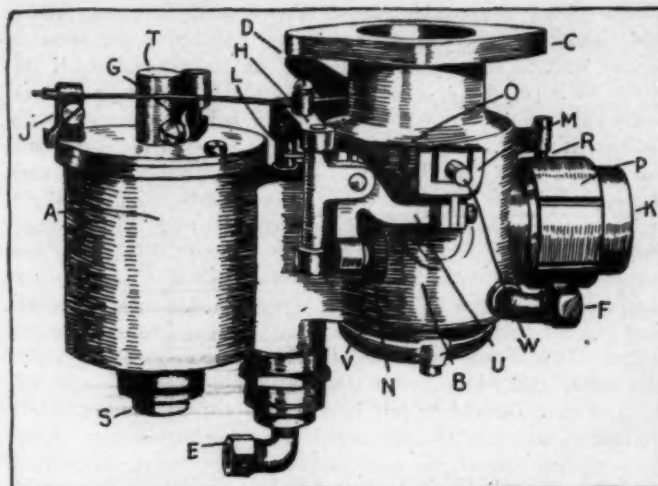


Fig. 2—Rayfield carbureter with dash control feature

or two to increase the spring tension and slightly decrease the quantity of air. Do not touch the air adjustment until it proves itself necessary as it is always best to favor a lean mixture as much as possible. Two important points to remember are: First, not to touch the low-speed adjustment except when running slowly and idle. Second, do not open the throttle more than one-quarter when starting. Before cranking the motor, pull the dash button up. After the motor has been running long enough to become warm, push the dash button down into the running position. The adjustments on the older Rayfield are shown in Fig. 1; they correspond to those on the carbureter described.

Chains Make Too Much Noise

Editor THE AUTOMOBILE:—The chains on my commercial car, which were extremely silent when I first started to use the car, have become noisy. I think that the cause of the trouble comes from neglect, as I have never given them any attention and have not thought that it was necessary as there did not seem to be anything complicated about them which could get out of order.

Boston, Mass.

INTERESTED.

—According to the instructions furnished by the most prominent makers of chain-driven cars, you have been neglectful of an important feature of your car. The chains should be cleaned the minute they commence to make a grinding or snapping noise. This may develop in a very short time on a car which is continually being run through mud and water. One day is sufficient in many instances. On dry roads, the chains may go a considerable distance without any attention whatever. The best way to get at the chains to clean them is to jack up the rear wheels and then clean the chains and sprockets as well as possible with a stiff bristle brush, turning the wheels with the hands. Wipe off the accumulated dust with a piece of waste. After this is done, the motor should be started, with the gears in neutral. Shift into the reverse gear with the motor running very slowly and, while the chains are moving, squirt gasoline on them. This will cut away all dirt, whether on the outside of the chain or in some inaccessible place in the action.

After the chains have been cleaned to such an extent that the gasoline which drips from them is practically free from dirt, stop the motor and give the chain a thorough coating of grease which contains graphite. Grease of this description can be secured from any supply house and is especially adapted for chain purposes. While applying this grease, the wheels should be revolved slowly by hand so that it is worked well into the chain links and rollers. The surplus grease can be wiped off after you are sure that it has been worked in thoroughly.

For a truck that sees much rigorous service, the care of the

chains should be extended even further than this. Remove them and clean them thoroughly in a vessel containing hot soda or potash water. Gasoline can be used as an alternative, if desired. It is possible to make the chain much cleaner by shaking it around in the solution. The particular point to observe in the cleaning is that the dirt is removed from between the inside and the outside links and the pins. There is a rolling action over these pins and it may be readily perceived that only a slight amount of grit would have to be present in order to wear them away very quickly. After they have been removed from the potash solution, or the gasoline, the chains should be wiped dry and put in a bath of hot tallow and plumbago. The best combination for the bath should be one part plumbago to seven parts tallow. This should be melted slowly in a pan to a water-like consistency and when in this state the chain should be put into it. The chain should be left in this bath for 20 minutes, while the bath is still over the fire, which must not be too hot. After this time has elapsed the pan should be removed from the fire and, when the tallow has cooled, the chain may be removed and the surplus tallow taken off. The chain may then be replaced.

Home-Made Motor Repair Frame

Editor THE AUTOMOBILE:—Some weeks ago there was mention in THE AUTOMOBILE of a home-made repair frame by means of which the repairman could work on the motor at any angle. This frame could be cheaply made in an ordinary shop out of materials which were cheap and at the same time easy to procure. I have need of just such a frame in my repair shop and I would appreciate information regarding the making of this frame. If THE AUTOMOBILE would publish a working drawing and directions as to how to go about making the frame I would be greatly obliged.

South Bend, Ind.

REPAIRMAN.

—The repair frame of which you speak was composed of pipe. The difficulty found in making this frame was that it was so hard to get the pipe joints to match up properly that it required considerable time, patience and skill to build it. A light frame can be readily constructed which will fill all the purposes of light repair work in the ordinary shop is described herewith. It is easy to get the material and not hard to put the frame together. Such a frame is shown in perspective in Fig. 4.

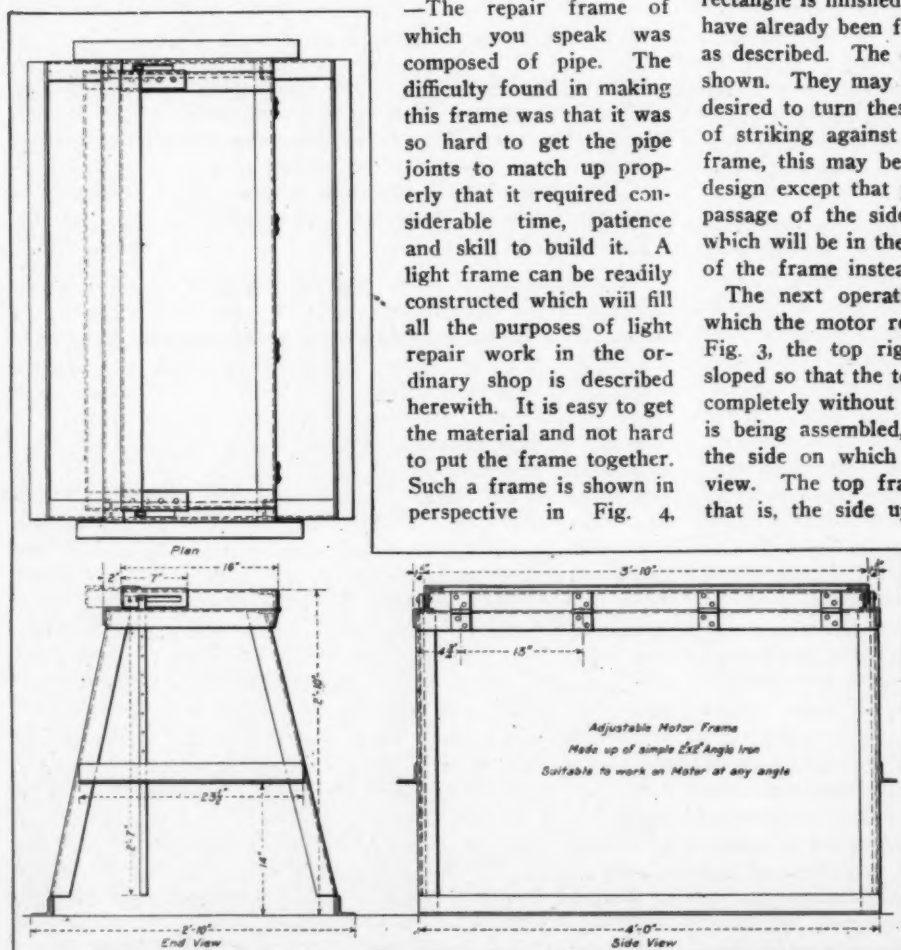


Fig. 3—Working drawing of home-made motor rack, with principal dimensions

while a working drawing of the frame is given in Fig. 3.

The frame is constructed entirely from 2 by 2-inch angle iron weighing 4 pounds to the running foot, or, in other words, 5-16 inch thick. The frame requires about 41 1-2 feet of this, giving a total weight of 166 pounds, exclusive of the side-bars, which are of steel 2 feet 7 inches long by about 1 1-2 inches in width and 1-2 inch thick. These will weigh in the neighborhood of 7 pounds apiece and bring the total weight of the frame up to about 187 pounds. In ordering the material, it would be well to allow a few feet. A total of 50 feet of the angle iron will be sufficient, with a small amount left over to form auxiliary cross-members to accommodate a motor designed for three-point suspension and which will not otherwise fit on the frame. The cost of angle iron 2 by 2 by 4 inches averages \$2 per 100 pounds throughout the country. Cut to the required lengths, this size would be about 20 cents a hundred pounds more. On an order of 50 feet of angle iron this would bring the cost for material to \$4 uncut and \$4.40 cut to required size. Outside of this there are the two side-bars, which can be purchased at small cost from a blacksmith, while the four big hinges may be secured from any hardware dealer. The total cost for material should not be more than \$6 under any circumstances.

The making of the frame can be carried on in the repair shop without difficulty, as a study of the working drawing will show. The angles are first cut to size according to the measurements given in the working drawing. The best method to follow is to first rivet the two legs to each longitudinal bottom piece. After these are fitted in place, the next step is to rivet together the four pieces forming the rectangle that is rigidly fixed to the four legs or uprights. As will be noticed, there is a slit punched through the two end members of this rectangle. This slit is made by punching out the angle, preferably before the rectangle is assembled, although this is not necessary. When this rectangle is finished it is riveted to the top of the uprights which have already been fastened to the two longitudinal bottom pieces as described. The cross-pieces are then put on at either end as shown. They may be located 14 inches above the floor. If it is desired to turn these angles in, so that there will be no danger of striking against the projecting flange while working at the frame, this may be done without any alteration in the general design except that provision will have to be made to allow the passage of the side-bars through a slot in the interior flange, which will be in the way if these angles are placed on the inside of the frame instead of on the outside as shown.

The next operation is to assemble the swinging frame on which the motor rests. As will be noticed in the end view in Fig. 3, the top right angle of the rigid rectangular frame is sloped so that the top frame will be capable of being turned over completely without striking the hinge. When the removable top is being assembled, all the measurements must be made from the side on which the angle is bent in, as shown in the end view. The top frame is then riveted together on three sides, that is, the side upon which the hinges are fastened and the

two ends. The open side forms the adjustable part of the frame which makes it suitable for use on motors having different distances between the points of support. The part which fits into this open or adjustable part is then riveted together so that it fits over the first-mentioned part. This construction may be more readily seen in the end and side views than described. The slot on the short, top side member, as seen in the end view, is for the purpose of allowing the end to be moved in and out without interfering in any way with the side-bar that hangs down from the swinging part of the rack. The slot for the side-bars should be just as small as possible. This is

particularly important in the horizontal top flange which is pierced in order to permit of the side-bar's passing through, because the pin which holds the motor in the desired position passes across this slot. The narrower the slot, the stronger will be the pin. As for drilling the holes in the frame for the different motors, it would be well for each repairman to determine this for himself as it will depend on the motors upon which he is working. If he handles a special line, or if the frame is built by the owner of a car, he will know exactly what is needed. The distance between the supports has not been standardized, but, with the frame constructed as shown in the working drawing, there should be no difficulty in fitting any motor. If desired, the frame can be swung entirely over. The two side-bars then act as legs. The frame will have to be bolted to the floor if the operator desires to work on the motor at any angle. Four large bolts should be used for this purpose and they should be put in securely.

In putting the motor on the frame it should be bolted on securely as the frame is lightly constructed, and, while sufficiently strong if handled carefully, will not stand the greatly augmented strains if the motor is secured to it while working. The same bolts by means of which the motor is held to the frame of the car may be used in holding the motor to the rack. If any hammering or similar work is to be carried on, it will be found advisable to insert wood disks between the frame and the motor, allowing the retaining bolts to pass through these disks. The noise of the work and the shock on the frame will be greatly lessened if this is done.

Wants to Lower Splash Level

Editor THE AUTOMOBILE: I have a Haynes car which is lubricated by the splash system. I get too much oil and am consequently troubled by a smoky exhaust which has more than once caused me to be hailed by the police in different towns. The only method I can see to do away with this trouble is to cease feeding so much oil to the cylinders, but just how to go about this I do not know. Could THE AUTOMOBILE give me any suggestions regarding the matter?

Dayton, O.

READER.

—This trouble can be readily prevented by lowering the trough walls so that the oil is not kept at such a high level. By means of a triangular file, a V-shaped slot may be cut in the top of the trough walls. It would be wise not to cut more than a scanty 1-16 inch at first in order to note the effect, because, once this is done, if enough oil is not supplied, it will be difficult to make a good job of bringing the oil back to its former level. Be sure to remove all filings before re-assembling the crankcase, as these are likely to work their way to the oil pump and other delicate points.

Clutch Action Is Too Severe

Editor THE AUTOMOBILE:—The clutch on my car is of the leather-faced cone variety with flat springs beneath the face of the leather. As I understand it, these are supposed to be for the purpose of making the clutch action easy. Of late, however, the clutch squeaks when it is engaged and the car jumps ahead in a way that severely jars the occupants and strains the mechanism. I cannot let the clutch in gradually, no matter how slowly I release the pedal. Can THE AUTOMOBILE tell me what I should do? The car is fairly new.

Grand Rapids, Mich.

T. R. TAFPE.

—The fact that the car is fairly new would seem to indicate that the trouble is not so much in the wearing of the leather as in its drying out. The cure lies in spreading over the clutch leather a thick layer of castor oil. The clutch is blocked out by pressing down the pedal and wedging it there with a prop between the pedal and the front seat. A cloth pad will prevent marring the woodwork. The castor oil is then spread over the leather and allowed to stand at least 24 hours before the clutch is used again. This will render the leather soft and pliable and

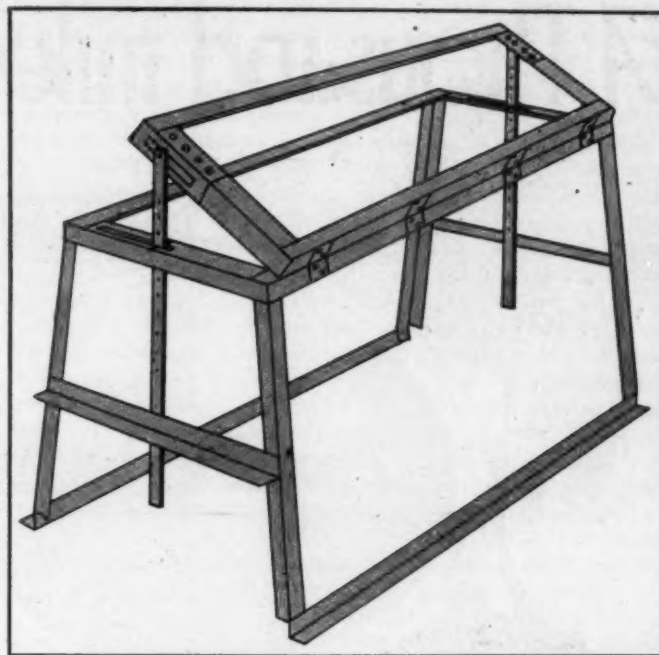


Fig. 4—Perspective view of motor rack partially lifted

will cure the harsh action of the clutch. A still better oil for this purpose is neat's foot. The treatment is the same as when using the castor oil, the important feature to remember with either oil being that the clutch must be left standing for 24 hours to allow the leather to absorb the oil.

Making Air-Cooled Cars

Editor THE AUTOMOBILE: Will you kindly inform me if the air-cooled car is practicable? Is not the use of air-cooled cars dying out? If not, would you kindly give me the name of some of the makers of this type of motor?

Charleston, W. Va.

B. C. WEST.

—Air-cooled cars have long since proved their practicability and may be seen everywhere in both commercial and pleasure work. Some of the prominent economy tests have been won by Franklin cars which are all air-cooled. Well-known air-cooled cars in the pleasure field are the Adams-Farwell, Dispatch, Franklin, Jonz, Roder, Rogers and Pickard, while some in the commercial line are the Chase, Dispatch, Duryea, Franklin, Hatfield, International, Kearns, Kelly, Lincoln, Mercury, Rogers, Schmidt and Veerae.

How Many Miles from a Casing?

Editor THE AUTOMOBILE:—I have a five-passenger touring car. The roads around this part of the country are fairly good and I am not a speed demon. My speed averages close around 20 miles an hour on a tour. How many miles should I expect from a 34 by 4-inch casing on the rear wheel?

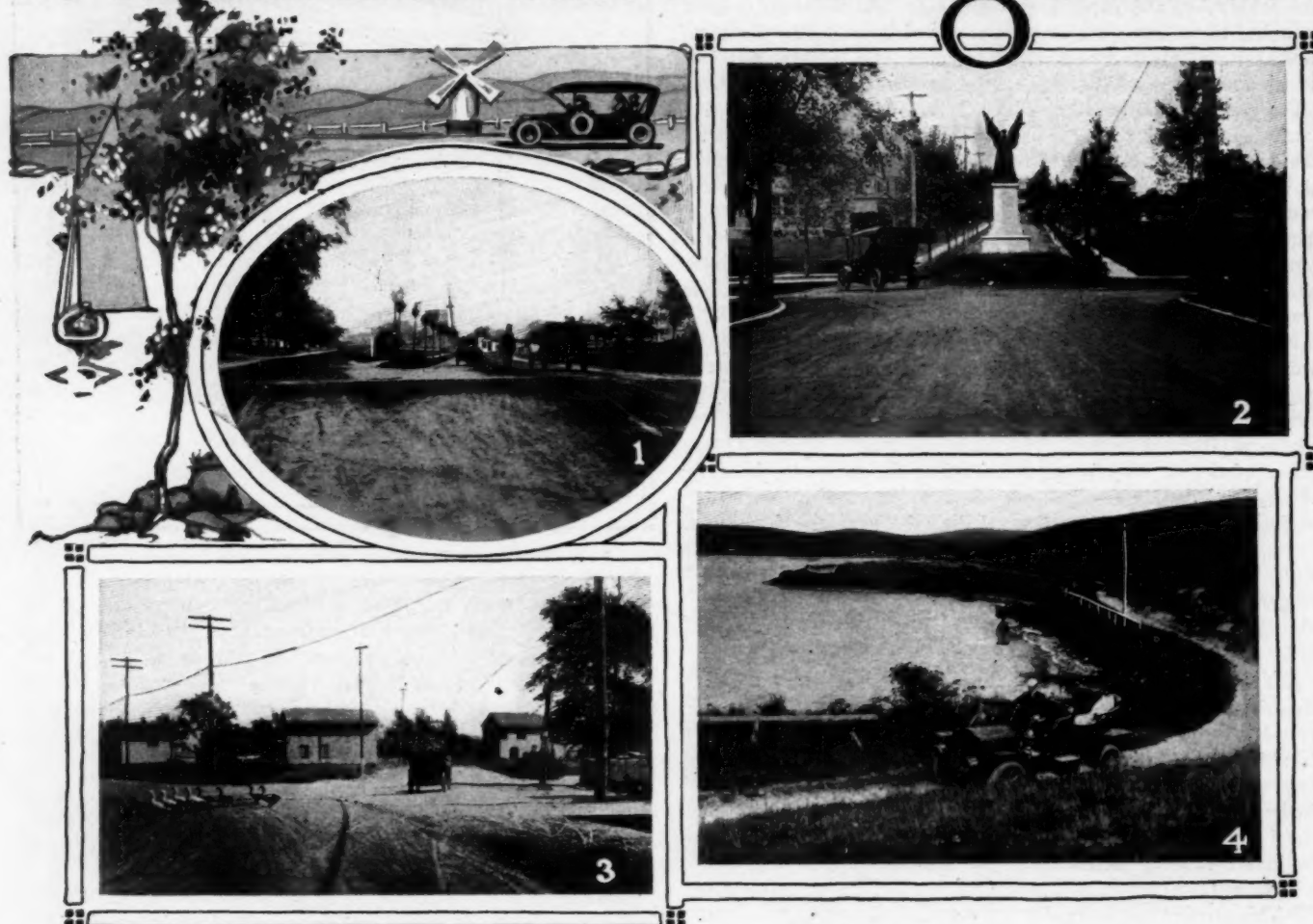
New Rochelle, N. Y.

TOURIST.

—If you are a careful driver, an average use of 6,000 miles would not be too much to expect under the circumstances you mention. It must be remembered that a careful use of the brakes and of the clutch has as much to do with the life of the tire casing as speeding. If you are careful in all these directions you should get about the distance mentioned from a casing.

A factor which has to be considered in determining the length of time that a tire casing can be expected to last, is the weight of the car. You do not mention this so an average weight is considered. The tires of course are always pumped up and the cuts in the casings repaired as they occur, these two features are absolutely essential to the life of the car.

A Thousand miles on Long Island



1—Garden City, at a point made famous by Vanderbilt Cup races
3—Where the road forks to the west, south of Hicksville

2—Artistic, but a bad place for motorists on a dark night
4—Skirting the ocean's shore on the way to Montauk Point



Entrance to Prospect Park

LONG ISLAND, ideally located with reference to the metropolis, is one of the most popular automobile touring fields in the world. Its roads have a national reputation, which, it must be admitted, is not so firmly founded on fact as it may have been in the past. But in the main the roads average fairly high and include probably 1000 miles of highway that may be classed from good to fine. Its scenery runs the whole gamut, only excepting real mountains, and some of the grades on the north shore will serve to remind the visitor of the hill country.

A day or a week may be spent with enjoyment in touring Long Island, and June and July are the best months in the year for such a tour. The summer hotels are open and first class accommodations may be had in every section of the island.

The island itself is the largest insular body included in the United States proper. By road it is 133 miles from Long Island City to Montauk Point and ranges from 20 to 40 miles across at various diameters along main highways.

The south shore from the mouth of the East River to Montauk Point is pierced by four large bays, respectively: Jamaica, Great South, Moriches and Shinnecock and numerous smaller indentations. Each of these larger bodies of water is dotted with a myriad of small islands, and despite their proximity to

New York the section is a hunter's paradise. Great South Bay is a wilderness that is only dimly known to a surprisingly small proportion of New Yorkers. Among the islands at the west end of the bay, water fowl have nested for centuries and still inhabit the locality in tremendous numbers.

There are some fair roads leading to such districts, but as a general thing they are rough or sandy, and after leaving the main highways the operation of the car will require more care than when bowling along on the hard and fairly smooth surface of the average Long Island road. But there are numerous enjoyable features of a prowl off the main routes. One rather perfunctory trip of this class is a run to Long Beach. The character of the scenery along the way gives promise of what may be found by exploring Great South Bay or those farther east.

Palatial Homes Along South Shore

The south shore is noted as a place where wealthy men have located summer homes. From Jamaica Bay almost to Southampton they are strung along the shore, singly and in groups, sometimes closing off miles of the shore line, as in the case of the country east of Bayshore. Some of the residences are built on palatial lines and are kept in such perfection that they are wonderfully attractive to the eye.

The east end of the island is deeply indented by Great and Little Peconic bays with their fleet of islands, a veritable vacation country for the city man.

The eastern half of the north shore line is sparsely inhabited

clear to Port Jefferson, but west from that picturesque town there are nine deep bays ending with Flushing and making straight line travel along the coast a delightful impossibility.

The western end of the island is practically metropolitan territory. The middle third is devoted to farming of various sorts and to housing the commuter and his wealthy brother. The east end is the section par excellence for the summer tourist and the professional fisherman. There are square miles of pine forest south of Riverhead without a single permanent resident; there are whole stretches of the eastern highlands without a human habitation, and after leaving East Hampton on the way to Montauk, the sea-blown sand swales are as barren as the bottom of the ocean.

On the Road to Montauk Point

The main east and west highway leaves Long Island City, and passing the grade-crossing death trap on Thompson avenue swings southeast through Hoffman Boulevard to Jamaica. Thence, following the famed Merrick Road, which, by the way, is not so good as it used to be, but which is now being repaired in the worst spots, the route passes through Lynbrook, Baldwin, Freeport and trends into the South Country Road and passes Massapequa, Babylon and Sayville, following an almost due easterly direction.

Then comes a swing to the north around the eastern end of Great South Bay at Blue Point, the place from which the tantalizing little oysters got their name.

Opposite Bayshore, Great South Bay is so wide that the Fire Island lighthouse and the flat sand island that protects the shore from the rolling ocean is almost merged with the horizon. This barrier of sand is a characteristic feature of the whole south shore of Long Island, extending from a point southeast of Coney Island to Southampton with only about a dozen breaks.

A little farther east the sand barrier is within a mile of the mainland, but in some places it is as much as 5 or 6 miles. Rockaway Park, Far Rockaway and Long Beach are situated on the barrier, or what corresponds to it in their localities.

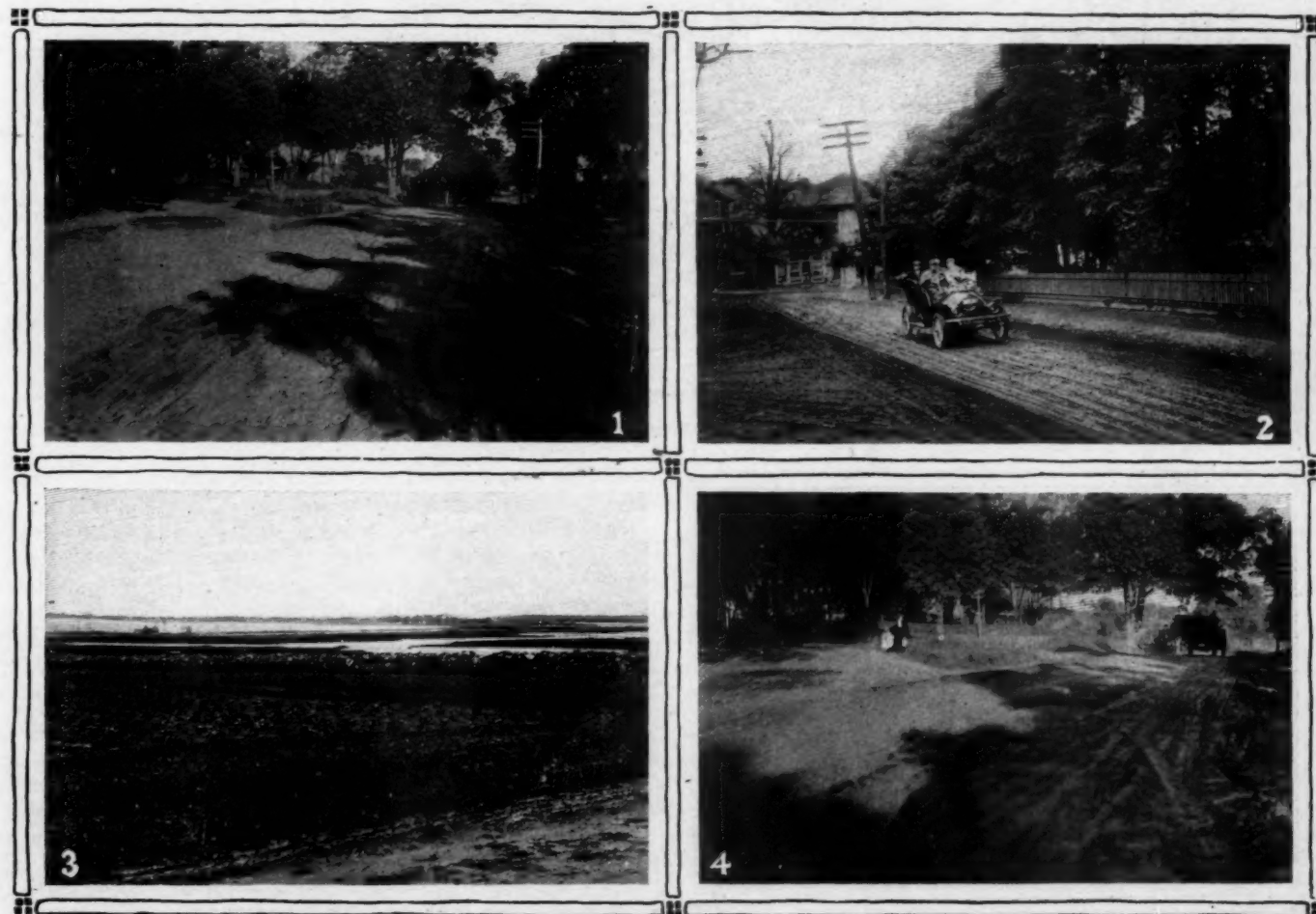
Leaving Blue Point the road winds eastward in long reaches like a ship tacking across a quartering wind. It passes through Patchogue, Moriches, skirting the shore of Moriches Bay, and proceeding east from Quogue it rounds Shinnecock Bay to Southampton. Along this way about 8 miles to the east, the road forks, the left road being the main route to Sag Harbor and the north side of the island. But straight ahead leads to Montauk Point.

This is a hard run. The sand is deep and the going is trying for any automobile, particularly in hot, dry weather. Therefore June is about the best time in the year to make the Montauk run, because the weather is not uncomfortably hot as a general thing.

The extreme eastern end of the island is 31 miles from the Sag Harbor fork, and it is a good 3-hour run. If the tourist is going to spend several days exploring, it may be well to end the first day's run at Riverhead, a restful village at the head of Great Peconic Bay. From there, with an early start, the run to Montauk can be made in 5 hours without undue speed, and the return trip to Sag Harbor can be done in 4 running hours.

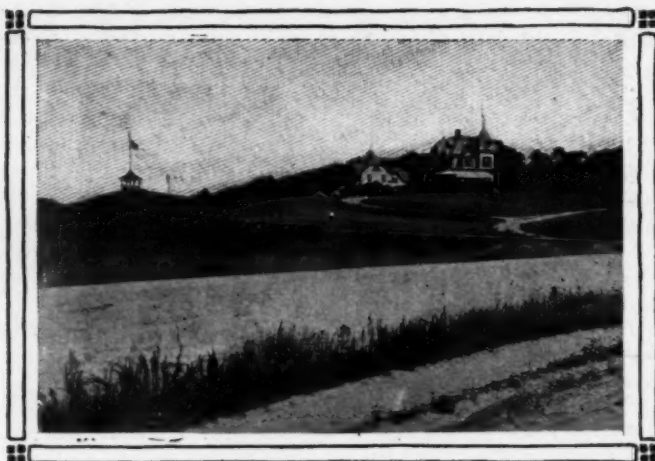
Some day, it is said, the terminus for New York's vast marine commerce will be transferred to the eastern end of the island. A view of the bay and sound from the bleak point where is located the Montauk light, now as peaceful as any natural scene can be, may include the groundwork into which a picture of the most intense activity and artificiality known to humankind may be drawn. For its possibilities along that line, if for no other reason, the trip to Montauk is worth while.

Leaving Sag Harbor there are two courses open to the automobile tourist. He may cross the arm of the bay lying between



1—Rural quietness as expressed on country lane near Smithtown
3—Across the well-drained tide-flats on the south shore

2—The main road along the north shore west of Wading River
4—Near Smithtown on the route from Islip across the island

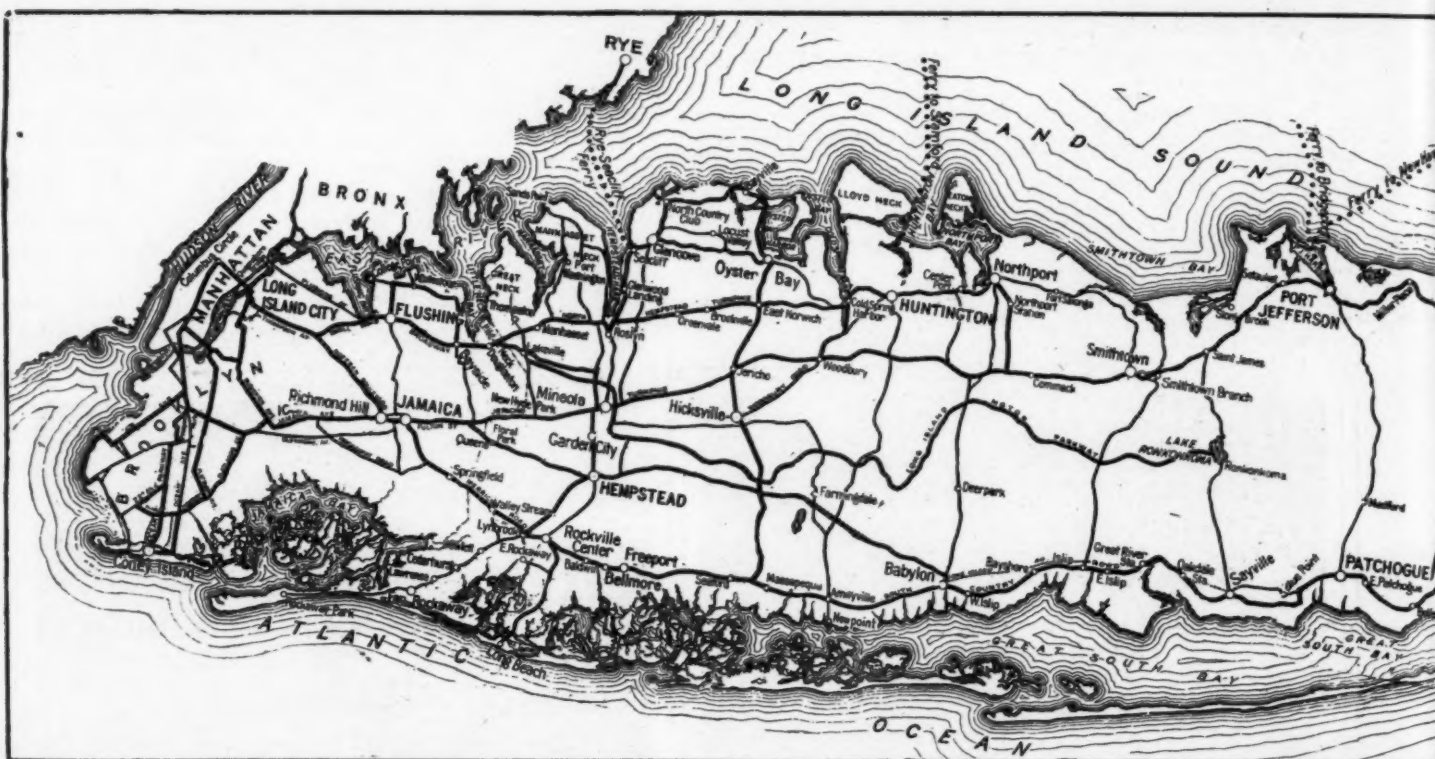


In the east end of Long Island isolated mansions crown the hills

Sag Harbor and a moderate-sized island in the mouth of Noyack Bay, motoring across this island to the Shelter Island Ferry, or he can ferry clear around the first island and unload on Shelter Island. Another ferriage must be made at the north side of Shelter Island to Greenport.

In the run west from Greenport the road is good and traverses a thinly inhabited section after passing the north arm of Southold Bay. Following the shore line of the Sound for 20 miles the trip is exceedingly interesting to admirers of natural beauty. Even the pine lands appear beautiful, and from Wading River through the hills to Port Jefferson every circumstance is combined to make a satisfactory whole.

The run back to New York from Port Jefferson can be made with ease in a short afternoon, but if the party is not traveling on schedule it will prove advantageous in every way to make several detours to the shore. The most picturesque route is to Smithtown, where a swing to the north should be made touching Fort Salonga and Northport. Centerport, Huntington and Cold Spring Harbor are then passed in order and another north-



Graphic map of the system of roads on Long Island, showing the north and south shore routes with



Climbing the last stiff grade before reaching Montauk Light

erly swing brings the party to Oyster Bay, noted for its picturesque leading citizen and natural scenery.

Passing Sagamore Hill, the most popular drive follows the shore line of Oyster Bay harbor to Bayville in the Sound and thence to the North Country Club, Glencove and Seacliff on the shore of Hempstead Harbor.

Continuing around this inlet a detour of considerable interest may be made to Sands Point and Port Washington on Manhasset Bay at the Sound end of the East River.

By using the North Hempstead turnpike, Broadway and the Shell Road across the end of Flushing Bay the tour of the island may be completed at Thompson avenue crossing.

But if the exploration ends with such a tour around the edges of the island, about 50 per cent. of its beauties will be overlooked. Commencing at the eastern end of the island the following detours and transverse trips may be made:

After returning from Montauk Point, instead of turning north at the fork east of Bridgehampton, the party may retrace its outward course as far as Southampton and then turn directly north

through the woods to the shore of Little Peconic Bay, which may be followed into Sag Harbor.

Upon reaching Greenport a fair road will be found leading to Orient Point. It is not so heavy as the Montauk road, but it is sandy in spots. If the tourists wish to ferry across the Sound to New London, Conn., the Greenport ferry will be found available.

On the return trip from Greenport, a fine variation of the route suggested as part of the main tour may be had by taking the left fork at Mattituck and proceeding through Laurel and Jamesport to Riverhead, thence westward along the Peconic River to Calverton, Manorville to Center Moriches.

This traverses a hilly country and a remarkably interesting topographic fact will impress itself on the visitors. The ridge, constituting the backbone of Long Island, contains a series of delightful small lakes in the crest of the highland. Just why the lakes should stand so much above sea-level, without adequate sources of water supply, has long been a marvel to geologists.

There are several country roads leading into the hills from the



Typical Long Island inn, patronized liberally by automobilists



numerous roads across the island and the various ferry connections (Courtesy of the Automobile Blue Book Publishing Company)

south shore, but none is recommended to tourists for incidental pleasure until Patchogue is reached, where a fine macadam road to the north makes a direct route to Port Jefferson.

Taking the same route followed on the circumferential tour from Port Jefferson as far as Saint James, which, like Oyster Bay, also has its picturesque leading citizens and much natural beauty, the left fork will carry the party across the island again, passing along Lake Ronkonkoma to Sayville.

Retracing the main route from Sayville to Islip, a right turn will take the tourists back to the north shore at Smithtown.

From Smithtown the main trunk highway extends westward through Commack, to a point opposite Northport, where a turn to the south takes the party through the baronial section of the island to Babylon.

At Babylon an excellent country road will be found extending in a northwesterly direction to Farmingdale and thence to Hempstead, Garden City and Mineola, from which place the historic Jericho turnpike, Fulton Street and Jamaica Avenue completes the tour at Brooklyn proper. If another terminus is desired,



The roads of the east end of the island are not exactly boulevards

the north shore offers several ferry trips to Connecticut points. From Port Jefferson the tourist may ship across the Sound to New Haven or Bridgeport; from Huntington a ferry is operated to Stamford and from Seacliff there is a line to Rye, on the Westchester side.

Besides all the suggestions above there are very numerous variants that may be made. The tourists, however, should be guided in their determination of routes of this sort by weather conditions and the amount of time that can be used for detailed exploration.

For instance, if after running to Long Beach the curiosity of the party is aroused to investigate some of the similar but less available bay sections, it would not be well to select a dreary, rainy day, despite the fact that there is more traction in wet sand than in dry.

Some time during the tour it will be necessary to make a run over the Motor Parkway from Garden City to Lake Ronkonkoma, unless the party wishes to overlook a rather novel experience. The surface is cement and the road was built exclusively for automobiles. It is protected throughout its length by wire fences and there is no speed limit.

All told the various routes suggested, with detours, foot up to the following surprising figures of mileage:

	Distance (No. 15)
	Miles.
Long Island City to Montauk Point.....	133
Montauk Point to New York.....	154
Detour to Long Beach and bay country.....	84
Transverse tours (6).....	128
North Shore variants.....	96
South Shore variants.....	84
East end variants.....	35
Motor Parkway and old Vanderbilt cup course.....	65
Optional excursions (estimated).....	71
Total	820

If the party wishes to explore a dozen or two of the fine country roads branching from the main routes of the western end of the island, the mileage can be increased to 1000, although an intimate detailed knowledge of Long Island can be gained from a tour of 820 miles.

With regard to the time necessary for such a trip, it would make a delightful 6-day tour. If so much time can be devoted to it, those who take part will receive impressions that will serve as the foundation for an ever-green memory.

If but 4 days can be spent on the trip, a circle of the island, eliminating the runs to Orient and Montauk Points, but including the detour along the Peconic River and the run down the Motor Parkway, will serve as a very pleasurable tour. If 2 days is the limit, the run to Riverhead, taking the northern route and returning by the south shore, will be found to be interesting, although both routes are quite familiar to the majority of New York automobilists. To visitors from other sections who have but 2 days to spend on Long Island as part of a general tour of the East, it is recommended that the south shore route to Patchogue, then the transverse to Port Jefferson, continuing to the Peconic River and back through Manorville to Center Moriches; then following the south shore to Quogue and Riverhead, will furnish a diversified course that will give an excellent idea of the country. From Riverhead such parties may return to New York via any of the routes outlined above, or the eastward way may be followed around the north side of Peconic Bay to Greenport and the Shelter Island ferry to New London. As a variation of the above, the course may be laid to Port Jefferson, where the other Connecticut ferries have their docks.

It would be the next thing to criminal to expect a true and vivid impression of Long Island in 1 day's touring; in fact, the section deserves better treatment at the hands of visitors. If there is any doubt in any one's mind about the accuracy of that statement, let him test it. It is so varied in the districts that it might seem to the observer to belong to several different sections of the country. A hurried passage through such a country would lead inevitably to confusion of mind, while a leisurely trip would make the opposite impression. As such a tour would have for its main motive the enjoyment of those who participate in it rather than the making of schedule time, the conclusion is unavoidable that as much time as possible should be used.

FROM THE AUTOMOBILE AND MOTOR REVIEW, JUNE 14, 1902:

The White steamer entered and driven in the recent endurance run of the Automobile Club of America by Windsor T. White made the entire 100 miles on a water consumption of 6 gallons and less than that amount of gasoline.

The experience in France has proved the great value of long road races, and there is no doubt that similar contests in different parts of this country would further both the improvement and the general popularity of the motor vehicle.—*Editorial.*

The Cleveland Automobile Company has been incorporated for \$125,000. A. L. Moore is at the head of the new enterprise. The plans of the company are to build a light gasoline car which will be assembled in the plant of the Cleveland Machine Screw Company. Sample cars have been finished and parts and fittings for 100 automobiles have been ordered. The new cars will not be on the market for several months.

M. L. Goss, of the Baker Motor Vehicle Company, has announced that the Baker racing machine that was wrecked at the Staten Island trials of the Automobile Club of America, killing two spectators, will be repaired and entered in another speed contest. Mr. Baker, the driver, said after the accident that from his seat inside the conning tower of the car it appeared as if the spectators on the side of the road rushed by the car in a semi-circle to the right just before the crash.

The Brown-Lipe Gear Company has decided to commence at once the building of transmission gears for automobiles. There will be two styles, one on the order of the French slide-gear, which can be arranged with as many speeds as may be required. The company will not make stock sizes with more than three speeds and reverse. The other style of gear will have two

Harking Back a Decade

speeds forward and reverse. Patent applications are now in the Patent Office and it is understood

that the claims of the company will be allowed.

Judge Hazel, of the United States Circuit Court, has handed down a decision in the case of the Electric Vehicle Company against the Conrad Motor Carriage Company involving the patent rights under the Elliott steering wheel equipment. Under the decree the exclusive right to make and use the device is vested in the Electric Vehicle Company.

At the meeting of the National Association of Automobile Manufacturers last week, action on a uniform form of guarantee was again postponed. Eighteen makers have subscribed to the standard form suggested, but it was decided to submit the matter to as many of the members as possible.

Recorder Goff, in New York, has handed down a decision to the effect that city magistrates have no jurisdiction in cases where violation of the speed ordinance is charged. In the specific case considered a fine of \$50 had been imposed for running 12 miles an hour and on appeal the Recorder reversed the city magistrate.

The American Automobile Association has promulgated a rule that participation in any unsanctioned and unlicensed contest will result in disqualification of those who take part. The particular event aimed at is the race meet of the National Automobile Racing Association scheduled for Brighton Beach track on June 21.

Henry Ford, of the Ford Automobile Company, was in New York during the race meeting May 31 to get ideas about racing machines. Mr. Ford is building a racing car for himself which will probably be ready within a month. It is possible that he will enter some contests.

Among the New Books

THE AUTOCARS OF 1912. Revised Edition. Published by Iliffe & Sons, Ltd., London, England. 22 pages. Price, 1/6.

This is an alphabetical table of all the cars which are on the British market for the season of 1912. The table includes the horsepower rate, R. A. C., bore, stroke, price, seating capacity, weight, speeds, drive, lubrication, ignition, wheelbase, tread, extreme width, extreme length, clearance, body space, dash to back wheel center length, and tire specifications. As may be seen, this is a handy compendium for a buyer's guide and a similar work should go well on this side of the water. All American cars on the British market are included in the list. Appended to the table is an illustration of the radiator and bonnet of every car mentioned in the table. It is by these that a car may be distinguished in the street and the illustrations are valuable for that purpose alone.

THE COAL TRADE. By Frederick E. Seward, Editor of *The Coal Trade Journal*. Published by the Coal Trade Journal, New York. 192 pages with many tabulations. Price, \$1.50.

Valuable information relative to coal production, prices, transportation, tonnage, receipts, resources and so on, both in the United States and abroad, up to the end of 1911 is contained in this book, which is virtually an annual publication. The work has been produced for 38 consecutive years, and the present edition is corrected to the latest dates. Many facts relative to the coal trade which are worthy of preservation for future reference are to be found within its covers. An interesting review of the status of the coal industry for the previous year serves as an introduction to the mass of data which follows. The coal production of the United States, consideration of oil as a steamship fuel, statistics of the export coal trade, the coaling of the large ocean greyhound, the labor employed in the mining of coal in this country, and the conditions of the trade in the large cities are among the many subjects treated. The book should prove a valuable source of information to those who are in any way interested in coal matters.

POPULAR HANDBOOK FOR CEMENT AND CONCRETE USERS, by Myron H. Lewis, C.E., and Albert H. Chandler, C. E. Published by the Norman W. Henley Publishing Company, New York. 430 pages octavo, with 126 illustrations. Price \$2.50.

As distinguished from a text book, this work is more in the line of a complete reference book on the subject of both cement and concrete insofar as the mixing and application thereof are concerned. Every usage to which cement has been put in the last few years has been taken up in a complete and explanatory manner, the authors not confining themselves to the mere formulas involved, but completely discussing all phases of the action of the cement under different circumstances. The failure of concrete which has done much to weaken confidence in this material as used in modern construction, particularly in rail-road and bridge work, is discussed at length. Another subject which has been gone into deeply and which is of foremost importance to cement users consists of the waterproofing processes. The different methods of waterproofing are described with full directions as to how to proceed with their use and when to use any of the different methods which the cement worker now has at his disposal. The work is concluded by a chapter on the cost of concrete work. Several practical examples are given in connection with this phase of the subject, the examples being taken from actual contracts.

THE AUTOMOBILE AND THE LAW, by H. M. Ingram, of the New York State Bar, formerly Chief Clerk of the Board of Statutory Consolidation, Official Indexer of the New York Consolidated Laws. Published by the J. B. Lyon Company, Albany, N. Y., 208 pages, 4 1-2 by 8 inches, with index. Price, \$2.

Having often felt the need for a manual of the automobile laws of New York and the neighboring states, Mr. Ingram has gone over the statutes very carefully, making every doubtful

Calendar of Coming Events

Shows, Conventions, Etc.

- June 17-22.....Milwaukee, Wis., Convention and First Annual Show, National Gas Engine Association.
- June 20.....Philadelphia, Annual Truck Parade of the Philadelphia Inquirer, Philadelphia Automobile Trade Association.
- June 27-29.....Detroit, Mich., Summer Meeting of the Society of Automobile Engineers.
- July 10-20.....Winnipeg, Man., Canadian Industrial Exhibition.
- July 12-14.....Logan, Utah, Fourth Annual Intermountain Good Road Convention.
- July 22-26.....Detroit, Mich., Cadillac Week.
- Sept. 23-Oct. 3.....New York City, Rubber Show, Grand Central Palace.
- Dec. 7-22.....Paris, France, Paris Automobile Show, Grand Palais.
- Jan. 4-11.....Cleveland, O., Annual Automobile Show.
- Jan. 4-11, 1913.....New York City, Thirteenth Annual Show, Madison Square Garden and Grand Central Palace, Automobile Board of Trade.
- Jan. 20-25.....Philadelphia, Pa., Annual Automobile Show.
- Jan. 27-Feb. 1.....Detroit, Mich., Annual Automobile Show.
- Feb. 1-8.....Chicago, Ill., Annual Automobile Show.
- Feb. 10-15.....Minneapolis, Minn., Annual Automobile Show.
- Feb. 17-22.....Kansas City, Kan., Annual Automobile Show.
- Feb. 24-March 1.....St. Louis, Mo., Annual Automobile Show.
- March 3-8.....Pittsburgh, Pa., Annual Automobile Show.
- March 8-15.....Boston, Mass., Annual Automobile Show.
- March 17-22.....Buffalo, N. Y., Annual Automobile Show.
- March 24-29.....Indianapolis, Ind., Annual Automobile Show.

Race Meets, Runs, Hill Climbs, Etc.

- JunePortland, Me., Hill Climb, Maine Automobile Association.
- JuneSt. Louis, Mo., Reliability Run, Automobile Club of St. Louis.
- June 20.....Algonquin, Ill., Annual Hill-Climb, Chicago Motor Club.
- June 20-22.....Portland, Me., Reliability Run, Pine Tree Motor Contest Association.
- July 3-5.....Belle Fourche, S. Dak., Second Annual Track Meet.
- July 4.....Petersburg, Ind., Track Meet.
- July 4.....Riverhead, L. I., Road Race.
- July 4-5.....Taylor, Tex., Track Meet, Taylor Automobile Club.
- July 4-6.....Old Orchard, Me., Beach Meet, Old Orchard Automobile Association.
- July 5-6.....Tacoma, Wash., Road Races, Tacoma Automobile Club and Tacoma Carnival Association.
- July 15.....Milwaukee, Wis., Reliability Run, Wisconsin State Automobile Association.
- Aug. 8-10.....Galveston, Tex., Beach Meet.
- Aug. 23-24.....Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
- Aug. 25.....Columbus, O., Track Races, Columbus Driving Park, Columbus Automobile Club.
- Sept.Washington, D. C., Endurance Run, Automobile Club of Washington.
- Sept.Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
- Sept. 2.....Indianapolis, Ind., Track Races, Speedway.
- Oct. 7-11.....Chicago, Ill., Reliability Run, Chicago Motor Club.
- Oct. 12.....Salem, N. H., Track Meet, Rockingham Park.
- Nov. 6.....Shreveport, La., Track Meet, Shreveport Automobile Club.

Foreign

- June 16-23.....Vienna, Austria, Reliability Tour, Austrian Automobile Club.
- June 25-26.....Dieppe, France, Grand Prix de France, Automobile Club de France.
- Nov.London, England, Olympia Automobile Show.

point clear, his aim being to get away from the legal terminology as much as possible in order to render the laws readily understandable by the average automobilist. He often cites the decisions handed down by the bench when they throw light upon the interpretation of the law. The book is designed to enable the automobilist to gain a well-defined idea of his rights and duties as an owner or driver under the law and is conveniently arranged with this end in view. Besides covering the New York law very fully, the work gives the laws of Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island and Canada. Automobile insurance is taken up toward the end of the book, the presentation of the subject being such as to render the complicated portions comparatively simple. The book is very durably bound in cloth, the back having a flap which folds across the pages and into the front cover when the book is closed, thus protecting the pages.

THE AUTOMOBILE

Vol. XXVI

Thursday, June 20, 1912

No. 25

THE CLASS JOURNAL COMPANY

H. M. Sweetland, President
C. R. McMillen, Vice-President
W. I. Ralph, Secretary
E. M. Corey, Treasurer
231-241 West 39th Street, New York City

BRANCH OFFICES

Chicago—910 South Michigan Avenue
Boston—1035 Old South Building
Detroit—627 Ford Building
Cleveland—309 Park Building

EDITORIAL

David Beecroft, Directing Editor
George M. Schell
J. Edward Schipper
D. McL. Lay
James R. Doolittle
Hans Weysz
L. V. Spencer

BUSINESS

C. R. McMillen, General Manager
N. H. Van Sicklen, Jr., Office Manager

ADVERTISING

W. I. Ralph, Manager
L. G. Vogel, New York
F. B. Barnett, Cleveland
W. S. Young, Boston
C. H. Gurnett, Chicago
F. J. Robinson, Chicago
C. K. Brauns, Detroit

Cable Address ----- Autoland, New York
Long Distance Telephone ----- 2046 Bryant, New York

SUBSCRIPTION RATES

United States and Mexico -----One Year, \$3.00
Other Countries in Postal Union, including Canada -----One Year, 5.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order, or Register your letter.

Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

The Car Sensible

NEXT season's cars will be conspicuous by their clean-cut appearance. This will be due to several causes: Foremost in this respect is the clearing the debris from the running boards. The tool boxes, that for so many seasons have burdened the boards are being removed in many of the new models. The tools are being carried in cases under the front seat, taking the place of the gasoline tank which is being positioned under the back of the chassis frame. With several makers the battery box, also a running board decoration, has been removed and for next season will be snugly supported in a bracket under the main frame parts, where it is entirely hidden from view and much better protected than when outside. With those concerns still using acetylene for lighting the gas tank is being concealed and with the many concerns adopting electricity the necessary battery is hidden under the framework. Added to this house-cleaning rôle is the removal of the extra tire from the side of the body and the carrying of it on the rear of the tonneau. In some cases the rear position is not so desirable as at the side, notably from the appearance viewpoint, in that the rear of the car, with the license tag, the tail lamp, the extra tires and the baggage rack is almost as cluttered-up as the dashes of many cars were a few years ago.

The external appearance of cars is an important factor in the industry. There is not a person but has regard for appearance, and the same characteristics which exhibit

themselves in the cut of a suit of clothes or the style of a summer hat exhibit themselves in the body appearance of a motor car. Today it can be said to the credit of the American body designer that many of the medium-priced machines have as well-designed bodies as have a number of the highest-priced vehicles. The exclusiveness of design in the high-priced machine of a few years ago is wanting today, except as portrayed by exquisiteness of finish and care for detail in the smallest respects. The time is every year coming nearer when all parts of the car, from radiator to baggage rack, will constitute a more harmonious whole and not a jargon of conflicting curves, incongruous colors and unshapely parts.

The Frenchman and the German have done much to set the pace of body styles. Many of the most lauded features of body design in our leading cars of today are imitations of the French and German. The Frenchman is an artist in lines and curves. He, as no other person, is competent to interlace the concave and the convex, the converging and the diverging to a fascinating completeness. He compels applause to designs that from another's hand would be radical and extreme, but, with the detail of his art, he adds what is apparently an insignificant curve and produces a dynamic design. The German, on the other hand, has gone more into the mathematics of body design and construction. He has taken the extremes of the faddist, the wind-resistance ideas of the enthusiast, the touring conceptions of the owner-driver, the racing instincts of the speedster and has woven these into his seven-passenger touring car, into his limousine, into his imperial limousine, his Berline, his landaulet and his brougham and coupé. He has produced a commendable design, a design that works economy to the chassis parts and comforts to the owner and his passengers.

The American body artist cannot do much better than tear a few pages from the design books of the Frenchman, the German and the Englishman. The Frenchman and the German have created body trends and the Englishman, while his work has not been so conspicuous from season to season in this respect, must be given credit for the evolution of the foredoor design which has been a conquering style since its inception. From the viewpoint of originality, it is questionable if any other land has produced more originality in the body field than Great Britain, but many of the designs have been local and have never become nationalized. The Englishman is fastidious to the extreme in the matter of bodies. When he goes to purchase the car the chassis is more or less of a detail, whereas the body comforts are pre-requisites. He takes his wife and often his daughters to the factory with him, and every detail of body luxury is investigated. The height of the seats is considered according to the individual needs, and it is not uncommon to see general lines altered to meet such detail requirements. As a result, the Englishman's automobile body is, like his dinner or his home, intended for himself and his family and not for the other man's family. This is truly a commendable system, but it is generally costly and often results in the chassis being overburdened with an excessively heavy body.

With the Frenchman, the German and the Englishman the external body appearance is a matter of greater concern than with the majority of Americans, and these foreigners have done more to solve the baggage-carrying question than has been done in this country. With them

the pressure feed gasoline system has been adopted largely to remove the gasoline tank from beneath the front seat for the purpose of lowering the seat or utilizing the space beneath it for carrying tools and other baggage. Often the seat is too low for this.

The Frenchman has been conscientious in his study of Pullmanizing the automobile—finding how many vacant spaces exist where small baggage can be carried instead of loading it on the running boards or tying it on the rear of the tonneau. The rearward extension of the body has not been carried to the extent it should have been, and it is safe to assume that within a year or 2 those concerns that are now carrying the spare tires and wheels back of the tonneau will have incorporated in the body design some method of entirely enclosing these unsightly

parts. This will add to the car's beauty and will be for the good of the tires or other parts carried.

The advent of the heavily cowled dash offers a new field for investigation in the baggage-carrying line. This position is an ideal one for tools for general car work and also for tire repair work. It is being utilized by some for the gasoline tank, but tools in this location are more convenient than if carried in a compartment beneath the rear of the chassis, in which position it is convenient to locate the gasoline tank. There is also ample spare room beneath the center of the chassis on the right, and also on the left side. This is now being utilized to carry the batteries, spare inner tubes and tire tools and still more use can be made of it with considerable improvement resulting in the riding of the car.

Big Show War in St. Louis

This City Now in National Association Circuit Which Will Cause Conflict with Plans of Local Organization

ST. LOUIS, June 9—There is going to be a bigger show war on than ever in St. Louis now that it has been put on the National Association circuit and a National Association show has been scheduled here for the latter part of February.

The St. Louis Automobile Manufacturers' and Dealers' Association here has abandoned the spring show and last fall held a very creditable and successful exhibition at Forest Park Highlands, a summer garden, during the Fall Festival week.

The members have decided to hold another show at the same time and same place next fall. Most of the members of the association handle cars of members of the National Association and will refuse to exhibit in February.

They say that one show a year is enough. The association has a rule that any member who exhibits at another show loses his association membership.

The Coliseum held a show last spring, but there weren't many high-class or popular lines of cars on exhibition.

This year they feel that many of the factories in the National Association will want to show their new stuff here and therefore figure on having a big show. Of course those not in the association will exhibit again.

Maryland's Patrols Catch Speeders

BALTIMORE, Md., June 16—Maryland and other motorists are warned not to be tempted to scorch over the new state highways lest they fall into the hands of the law. The patrol of the State Roads Commission, that is the men employed by this body to keep the new roads in repair, have been instructed to take the number of every machine that exceeds the legal speed limit of 25 miles an hour, and those numbers will be handed over to State Motor Vehicle Commissioner Roe. The commissioner can either impose a fine, a jail sentence or revoke licenses. Each patrol has a stretch of 5 miles under his care and he is supposed to make two or three trips over this stretch each day.

BY A COMBINATION of interest, the cities of Oshkosh, Winnebago county, and Fond du Lac, Fond du Lac county, Wis., are being connected by a new highway which is expected to be one of the finest in the West. The road will run along the west shore of Lake Winnebago, the largest fresh water body lying wholly within one state in America. The city of Fond du Lac subscribed \$2,500, the county \$5,000 and the state \$2,500 to build the Fond du Lac county portion of the road, while Oshkosh and Winnebago county raised a like amount.

Engineers Visiting America

Many Foreign Engineers and Factory Heads To Inspect Our Factories and Car Production Methods

NEW YORK, June 19—America is experiencing an invasion of foreign engineers at the present moment as well as an invasion of many production managers from French, English and German factories and not a few of the directors and others interested in increasing automobile production. The coming mid-summer convention of the Society of Automobile Engineers at Detroit is responsible for the numbers on this side at the present time. Some of them are here with the object of establishing engineering connections in a consulting capacity with American factories, others are investigating American production methods and others are here to purchase machinery for factories.

F. Searle, manager of the Daimler Limited 'bus and commercial vehicle department, is here to inspect the 'bus transportation system in the large American and Canadian cities and also to attend the trials of agricultural gasoline tractors at the Winnipeg, Man., exhibition. Mr. Searle was the moving spirit in the systematizing of the London General Omnibus Company, as well as in the designing of the 'bus chassis now being used in that service.

T. Blackwood Murray, managing director of the Albion Motor Car Company, of Glasgow, Scotland, and a member of the council of the Institute of Automobile Engineers, accompanied by David Keachie, superintendent of the Albion company, is on a tour of inspection of the American truck plants.

The Scottish engineers arrived on Monday and after a courtesy call at the headquarters of the Society of Automobile Engineers left for Providence, R. I. From there they will travel to Detroit and thence to Cleveland and Buffalo, starting the homeward journey on July 6.

R. W. A. Brewer, a consulting engineer of London, England, is in New York City for a visit of inspection to several of the typical American automobile factories. Mr. Brewer is a member of the Institutes of Automobile Engineers, Mechanical Engineers and several of the other British engineering societies.

During the recent visit of the S. A. E. to England, he was selected by the I. A. E. to escort the visitors across the channel. He will be in America about 6 weeks, and, among other things, will attend the S. A. E. convention at Detroit.

Mr. Brewer recently has written a series of articles on the functions, construction and operation of carbureters.

AUSTIN, TEXAS—The state railroad commission has issued an order which provides that second hand automobiles may be included in carload shipments of emigrant movables or household goods provided they will load through side doors of cars.

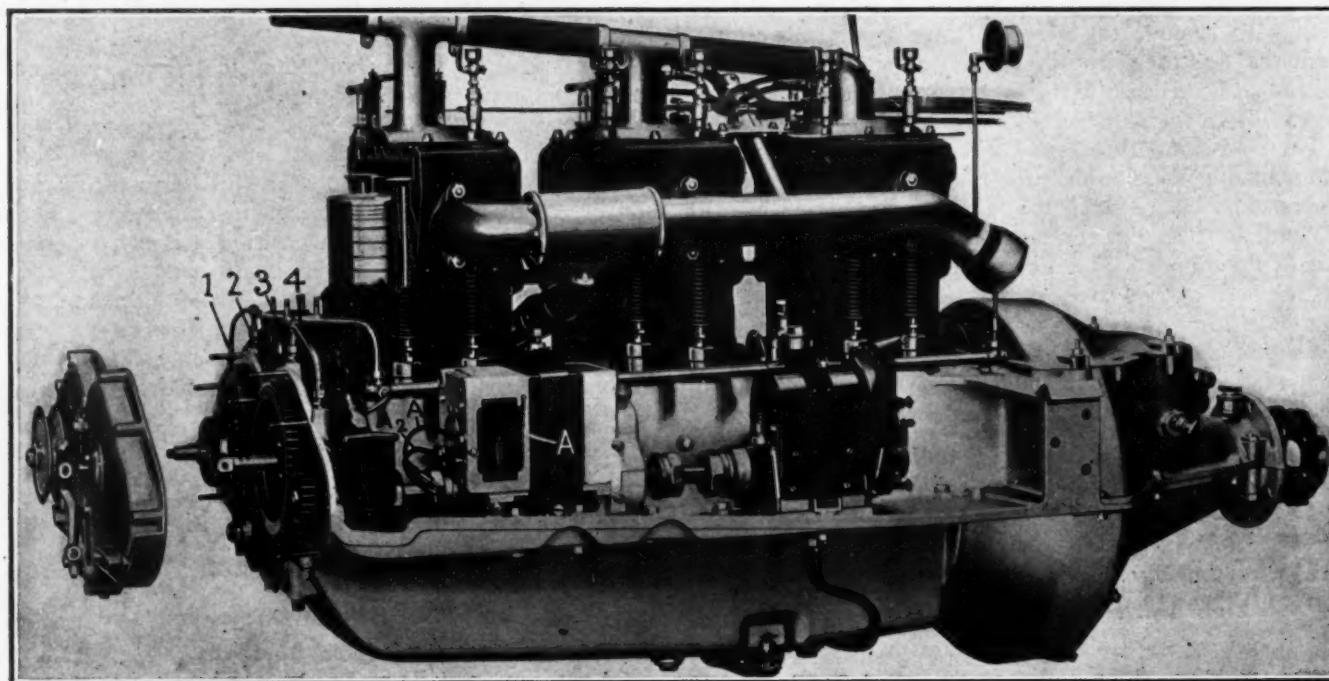


Fig. 1—Exhaust side Packard six-cylinder motor for 1913 models, showing the electric lighting dynamo A with its two wires A1 and A2 leading from it. Also the four oil leads 1, 2, 3 and 4 to the camshaft bearings, the magneto shaft and the pump shaft

The Packard Six for 1913

Improvements Include Electric Lights, Auxiliary Oiling System, Pressure Fuel Feed and Larger Bodies

FOR next year the Packard Motor Car Company has announced a continuance of its present six-cylinder, 48-horsepower car, which will be marketed with a series of eight different types of bodies, including touring car, phaeton, limousine, and imperial limousine on a 139-inch wheelbase, which is 6 inches longer than in 1912; the brougham and laundalet on a 139-inch wheelbase; and the runabout and coupé on a 121.5-inch wheelbase, the line thus including two chassis types so far as wheelbase is concerned, but all having the general Packard features. In addition to the six-cylinder model, the two four-cylinder types, namely the 18 and 30 will be continued in practically the 1912 form.

The six-cylinder model has undergone a series of changes of a more or less evolutionary nature, these including improvements in the lubricating system, the addition of a priming device or self-starter, and electric light equipment throughout, three-quarter elliptic rear springs, the use of pressure feed on the gasoline, improving the body appearance by taking the tool box and battery boxes off the running boards, and altering the body design in a few respects as well as making the body more roomy in the open cars.

The six-cylinder Packard motor is continued practically as this year. It is made up of six cylinders, cast in pairs with opposite valves. The cylinder dimensions 4.5 by 5.5 bore and stroke respectively give an S. A. E. rating of 48.6 horsepower. As the chart, Fig. 2, shows, this is at its crankshaft speed approximately 850 revolutions per minute of the crankshaft, which is a piston speed of 779 feet per minute. The chart further shows the maximum horsepower of 82 at 1,700 revolutions per minute, at which speed there is piston travel of 1,558 feet per minute.

The improvements in the oiling system are in harmony with the present trend of lubrication in America and Europe, namely,

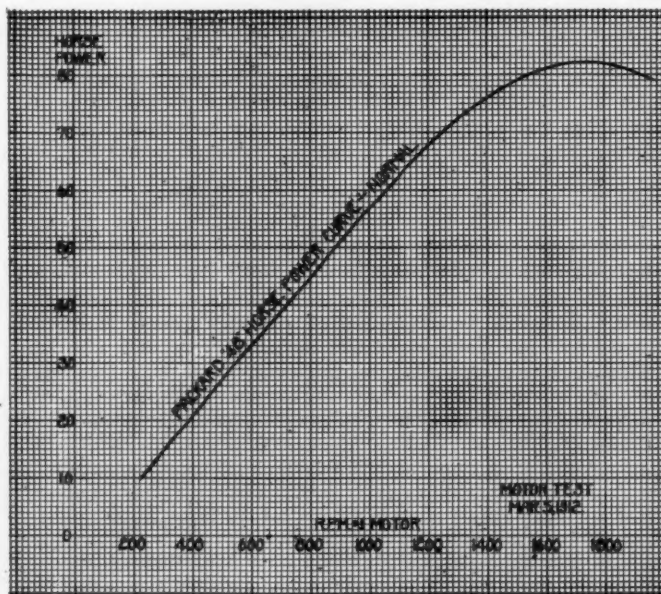


Fig. 2—Horsepower curve of Packard six, showing 82 horsepower at a crankshaft speed of 1700 revolutions per minute

the use of pressure feed of oil to all of the crankshaft bearings and also the upper and lower connecting rod bearings. The present problem of oiling is one of insuring an adequate supply at these points. In addition to this the Packards have adopted an auxiliary oiling system which is inter-connected with the throttle so that the more power and work the more lubricant. Fig. 14 illustrates the auxiliary oiling scheme. It consists of a series of external oil leads which feed into the cylinder walls on the intake side. These oil leads are brought into use by the throttle when it is one-third open or wider. These oil leads are connected with the main lubricating system through a check valve L2 and its interconnection through the throttle if through the bottom LI. The entrance of the auxiliary oil leads 1, 2, 3, 4, 5, 6 to their cylinders and also the main distributing oil pipe L from which the leads to the cylinders branch are shown. There are two other improvements in the lubrication system. One consists in

the direct lubrication of the piston pins which is made possible by forcing the oil from the lower connecting rod bearings to the upper connecting rod bearings. In the 1912 models, the piston pins are lubricated from the spray which collects on the cylinder walls and reaches the piston pin bearings through a recess in the piston wall. The aim for 1913 is to keep the splash out of the cylinder and to do this a baffle plate fills the lower end of each cylinder, there being a slot in the baffle through which the connecting rod reciprocates. Practically all of the oil reaches the cylinder wall by being pumped up the connecting rod and overflowing out through the piston pin against the cylinders. This method should be positive and give oil where needed. With this improvement the oil is forced by the pump to all of the crankshaft bearings, to the six lower connecting rod bearings,

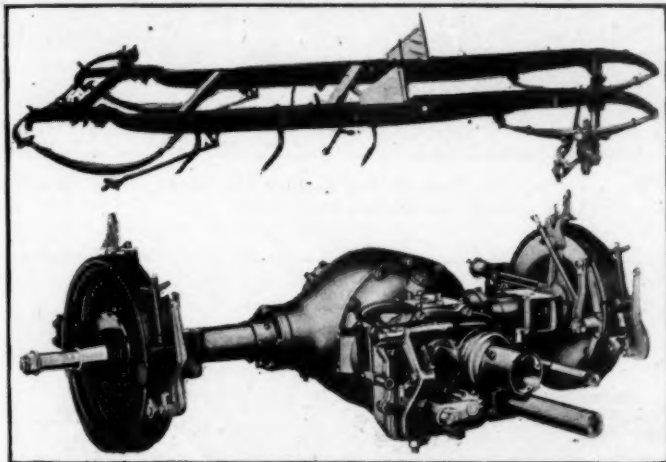


Fig. 3—Packard six frame, showing three-quarter elliptic rear springs, raised frame construction at the rear and the rear axle

to the six piston pin bearings and also to the forward camshaft bearings, the magneto shaft bearing and the water pump shaft bearing.

The Packard company claims by its auxiliary system and also

the improvements added to have increased the lubricating system five-fold with a smaller consumption of oil. Those not familiar with the standard oiling system should remember that it is a circulating non-splash type; the base of the crankcase has an oil reservoir in conjunction with which is an oil pump that delivers to the parts already mentioned. In the crankcase proper there is not a splash or oil well into which the lower ends of the connecting rods dip, rather a positive forcing of lubricant to the parts needing it. Fig. 4 shows the location of the filler tube, positioned between the middle and rear cylinder castings on the right, but one being used instead of two this year.

Motor Only Slightly Altered

Figs. 1 and 4 show the motor design, which from a constructive viewpoint has been little altered. The water pump, with its hydraulic governor operating on the throttle of the carbureter, has been moved rearward, the advantage in the new location being increased accessibility of the inlet valves springs on the front cylinders. On the opposite side of the motor the introduction of the dynamo A, for electric-lighting has pushed the magneto further to the rear, both being sufficiently low hung on the motor web to leave all of the exhaust valve springs particularly accessible. Also seen in this illustration is a stuffing box at the rear end of the exhaust manifold where it couples with the pipe to the muffler. In the 1912 model the exhaust manifold ends in a flange which bolts to a corresponding flange on the muffler pipe. With the stuffing box arrangement superseding the flange the manifold is relieved of any twisting strains that might be set up due to frame warping on rough roads. The return water pipe hose lengths are clamped to the T-pipes of the jacket heads.

The use of an acetylene priming device or self-starter is seen for the first time on a Packard motor.

The adoption of a complete electric lighting outfit is a good indication of the present trend in American car construction. The electric generator is made an integral portion of the motor, and is given the point of precedence over the magneto, namely, the left front where it is gear-driven direct, with an extension of its shaft to drive the magneto. The entire lighting system is

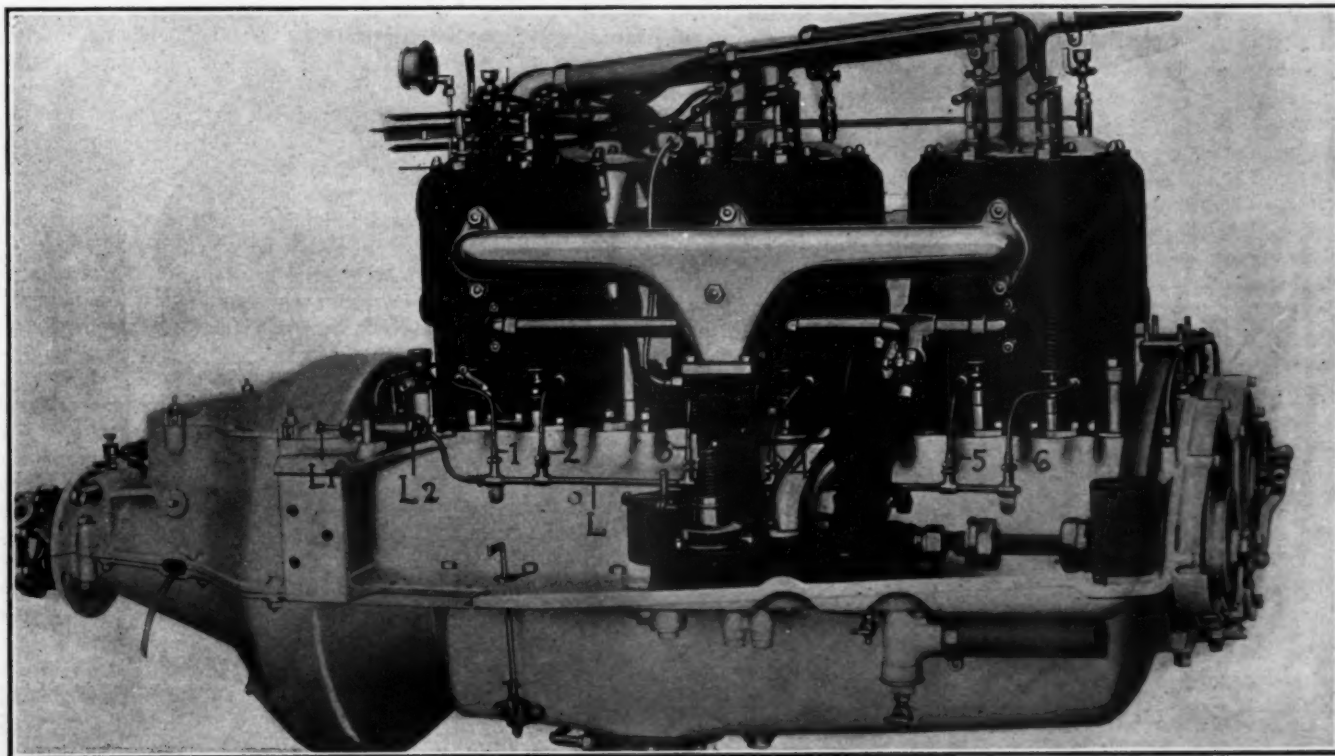


Fig. 4—Intake side of Packard six motor, showing auxiliary oiling system made up of distributing oil lead L with branches 1, 2, 3, 4, 5 and 6 to the cylinder walls. Also button L1 for interconnection with throttle control and L2 oil check valve

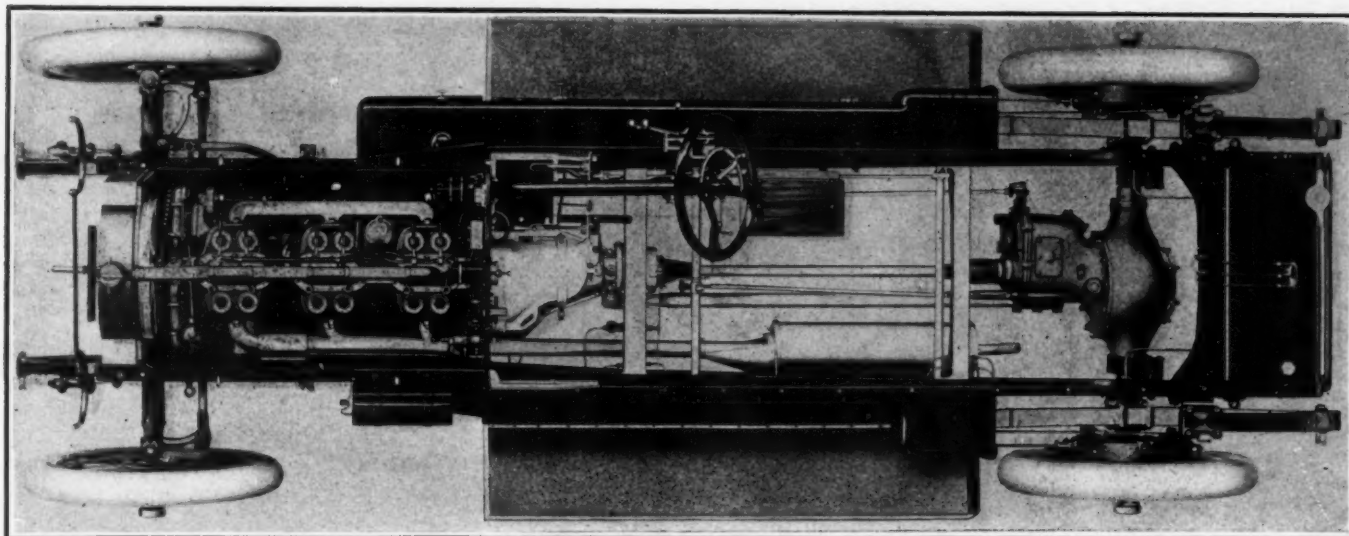


Fig. 5—Packard six-cylinder chassis for 1913—attention is directed to the clean running boards, the battery box now carried on the frame under the driver's seat and the gasoline tank located beneath the chassis at the rear

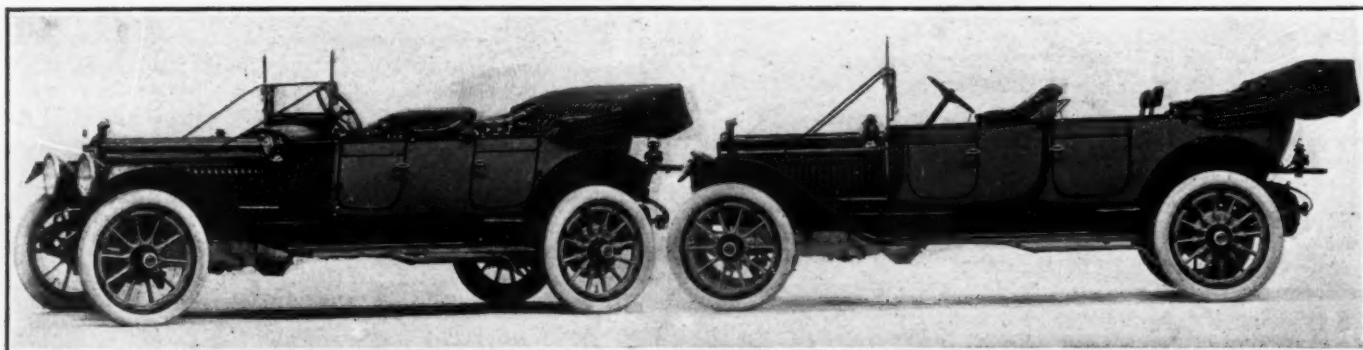


Fig. 6—Packard six phaeton with 139-inch wheelbase

Fig. 7—Packard six touring car with larger body

electric including as it does electric headlights and combination oil and electric dash and tail lamps. In addition to these there is a dash gauge lamp for the ammeter, gasoline and oil gauges and also a small glow light above the license tag which as heretofore is located on the right rear fender. The generator is not only accessible but readily removable in that a set screw at the top of the metal strap securing the dynamo may be loosened and the dynamo removed without disturbing the base which is rigidly bolted to the crankcase. Another feature of the lighting system is that the tail light is wired in series with the gauge lamp on the dash, so that if the tail lamp goes out the dash lamp is also extinguished. Thus a ready indicator is furnished the driver. Using a glow worm light in conjunction with the license tag makes it possible to use one of the rear lights as a signal when stopping or reversing.

The general use of pressure feed on the gasoline system can be taken as another trend to which all high-priced American cars are pointing. One of the big reasons for the adoption of pressure feed on the fuel is that it removes the gasoline tank from beneath the front seat and places it under the rear of the chassis, thus leaving valuable space inside the body for the tools which up to the present have been carried on the running-board.

Running-Boards Unobstructed

The tendency today is to clean the running-board, and the Packard company has succeeded in this by the use of electric lights, removing the tool box, and carrying the battery beneath the frame at a point directly under the driver's seat. In order to carry the gasoline tank under the rear of the chassis frame it has been necessary to change the design of the rear end of the side frame members. Heretofore these have had a

short arch above the rear axle, but for next year the arch is replaced by raising the rear end of the frame, and attaching the gasoline tank beneath this elevated portion. Pressure is maintained in the tank by an air pump incorporated with and driven by the motor. Beneath the floor boards is an automatic pressure relief for maintaining standard air pressure. This relief also collects any oil or water in the system which might collect due to condensation. A handy device in conjunction with the fuel tank is a small set screw on the right side of the tank which permits of draining off small quantities of gasoline. This plays another rôle in that it may be used to drain water collecting in the bottom of the tank if the rear wheel on the left side is jacked up or if the car is driven to the right side of a crowned road.

Diaphragm Carbureter Unchanged

The other characteristic features of the motor are retained, namely, the use of the Packard carbureter with its hydraulic governor, this governor consisting of a diaphragm enclosed in a compartment. The pressure of the water system bears on one side of the diaphragm. The other side of the diaphragm is inter-connected with the carbureter throttle, so that when the water pressure is greatest, due to higher engine speed, the diaphragm is bulged outward and through a rod connection partially closes the throttle, thereby tending to maintain a uniform motor speed.

From the motor to the rear axle the Packard transmission of last year is continued in its standard form. The flywheel with its multiple dry-plate clutch is completely housed in an extension of the crankcase, this extension having a bearing at the rear end for the clutch shaft. The propeller shaft uses two universals as formerly; and formed as an integral unit with the rear axle is

the three-speed gearbox, the Packard having been the pioneer of unit construction of gearbox and rear axle. The gearbox proper bolts through a heavy flange to the forward end of the casting forming the differential housing. Into this differential casting the axle sleeves are secured. The use of two sets of brakes on the rear axle, internal and external, is much the same as this year, the adjustments of these being shown in Fig. 3. A rear axle improvement is that the rear radius rod bracket is now formed into a plate, held to the axle by the spring clips, and so designed as to incorporate the lower rear bearing pin of the shock absorber.

Since the inception of its present line of cars the Packard company has been a consistent body builder, its body department being the largest of the American factories. For 1913 the company will build the majority of its own bodies of the closed and open type. Sheet aluminum secured to white ash frame work forms the basis of the body construction. In the touring cars the bodies are more roomy than this year due to a longer wheelbase, the rear seat being 7 inches wider, and the body 6 inches longer, the extra length being divided up 1 inch to the front seat compartment, 3 inches to the rear seat compartment, utilized between the folding seats and the rear seat, and 2 inches being absorbed in the under body. Further body comforts are afforded by thicker and softer upholstery. On the phaeton body the rear seats are 5 inches wider than this year. The use of undivided front seats on all models is characteristic. In order to avoid body squeaks a quarter inch space has been left between the body and the dash; large sized ventilators are also used.

Touring Car Rear Lines Altered

Viewing the bodies externally few changes exist over the design of this year: The characteristic radiator and bonnet are continued, but the rear lines of the touring cars are altered in that the tonneau is now made with a more sweeping curve, resembling that used on the limousine styles. All bodies are wired

for speedometers and electric horns. On all models irrespective of body design, a uniform tire equipment is furnished, namely 36 by 4.5 inches in front, and 37 by 5 inches in the rear. Right hand control is standard.

Foreign Trade Opportunities

AUTOMOBILES—A member of an organization in the United States, who resides in a large city of the West Indies, desires to purchase several passenger automobile busses, each capable of carrying fourteen or more persons, to replace coaches in a passenger service between two cities. Specifications and conditions of service can be obtained by addressing the organization in question. File No. 8,944, Bureau of Manufactures, Washington, D. C.

LUBRICATING OILS AND GREASES—An American consul in a European country reports that a business man in his district has requested to be placed in communication with first-class American manufacturers of lubricating oils and greases. The inquirer does not desire to act as agent, but wishes to make direct purchases against cash. Preference will be given to firms which are not represented in the country in which he is located, as he does not care to do business through middlemen. Samples and quotations c.i.f. city of destination should be furnished as early as convenient to the person in question. File No. 8,941.

MACHINERY AND AUTOMOBILES—The Bureau of Manufactures is in receipt of a communication from a member of an American firm stating that he will leave shortly for a business trip through England, France, Germany and Switzerland. He writes that during this time he will have an excellent opportunity to introduce American products in European countries, as he is well acquainted with the automobile and machinery trade of both Europe and the United States. He would like to hear from any American manufacturers who desire to establish European connections. File No. 8,960.

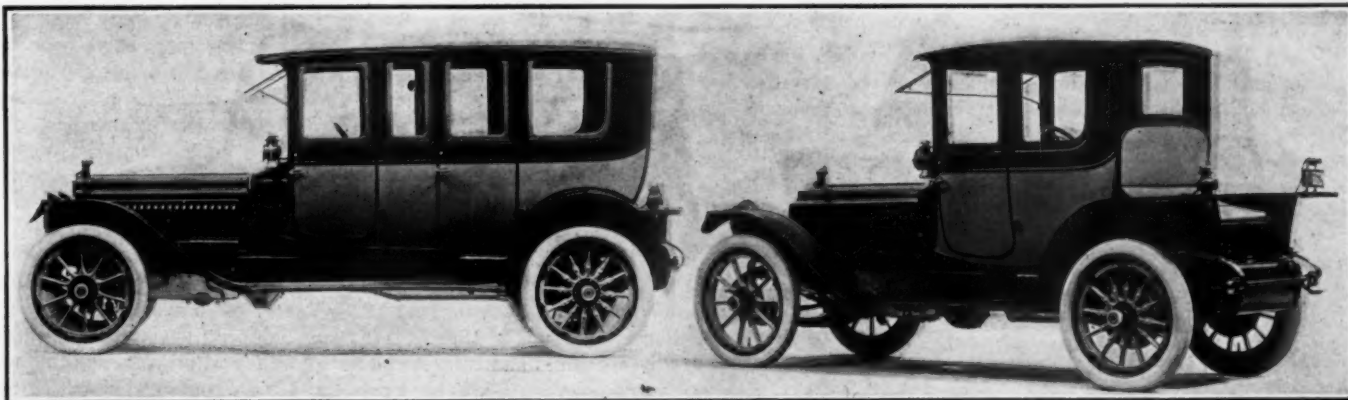


Fig. 8—Packard six brougham with 139-inch wheelbase

Fig. 9—Packard six coupé with 121.5-inch wheelbase

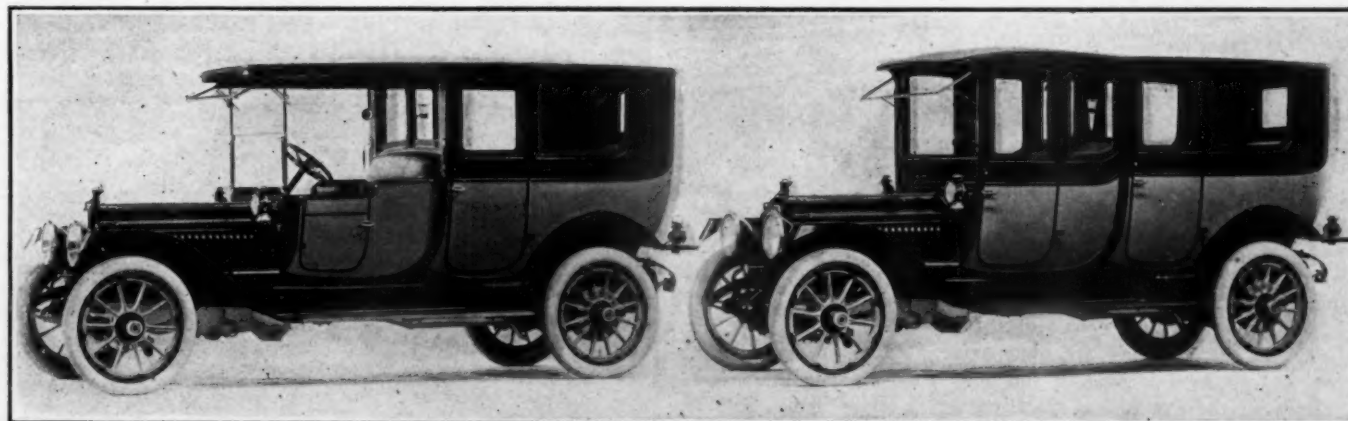


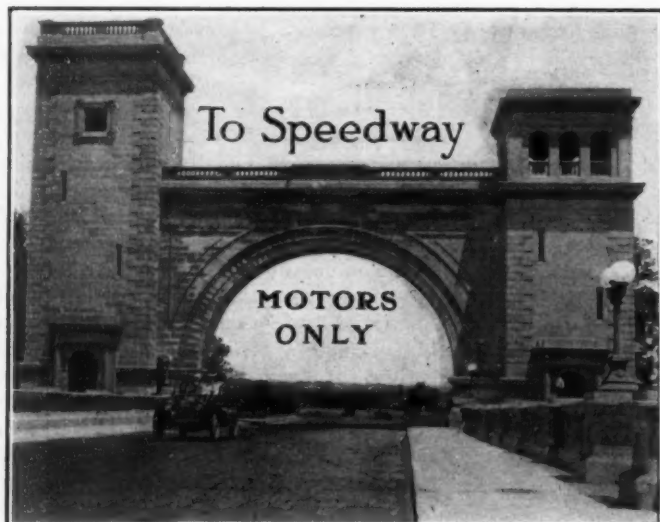
Fig. 10—Packard six limousine with 139-inch wheelbase

Fig. 11—Packard six imperial limousine with 139-inch wheelbase

Indiana City Bars Horses

Speedway, New Indianapolis Manufacturing Suburb for Automobiles Will Use Motor Vehicles Exclusively

Promoters of Motor Speedway Become City Builders With Many New Plans



Bridge and driveway leading to Speedway

INDIANAPOLIS, IND., June 17—Construction work on Speedway, the new horseless city, has been started by Carl G. Fisher and James A. Allison, president and secretary-treasurer, respectively of the Indianapolis Motor Speedway Company. By fall the new city will be well under way and within a few years it is expected it will be one of the principal industrial cities in the county, devoted entirely to interests allied with the motor car trade.

Some time ago Messrs. Fisher and Allison obtained control of 1,000 acres of ground near the Indianapolis motor speedway and it is here the new city is being built. The city will be fireproof in every particular. Both factories and dwellings will be of concrete or steel construction, with tile or roofs of other fireproof material. Every convenience for the comfort and pleasure of the residents and employees of the city will be provided. There will be parks and playgrounds for the children; recreation grounds for the factories and every street will be paved, with fountains in the street centers.

No horses will be permitted to enter the precincts of Speedway. Each factory locating in the industrial city will be required to sign a contract to do all of its hauling with motor trucks. The city is to be directly west of the motor speedway. There will be no barns, but there will be ample fireproof garages.

The dwellings are to be of the best modern type and only the highest grade of mechanics will be invited to live and work in the new city. The dwellings will be of concrete construction and will be sold on the easy payment plan to those mechanics who wish to buy. Messrs. Fisher and Allison will build all of the dwellings from their own architectural designs.

The work of centering all of the plants of the Prest-O-Lite Company at Speedway are under way. There are six of the plants, four now located in this city and two, for the manufacture of the gas tanks, at Milwaukee. These plants will be ready for occupancy November 1 and will represent an investment of \$250,000.

It is reported that two large automobile concerns will begin the erection of factories at Speedway within the near future. A large motor tire manufacturing concern, the name of which is being withheld for the present, and which is now located in the East, will build a plant at Speedway.

The New York Central and C. H. & D. railroad companies have already entered the site of the proposed city with their tracks. A traction line has established a station at Speedway, and the new city will also be connected with Indianapolis by a magnificent roadway.

It is not predicted that the new city will be a large money-making enterprise for the promoters. It is their thought that the motor industry may be well served by a city devoted wholly to the motor industry. They believe a concentration of such interests will result in a decrease in the cost of production, considering the excellent transportation facilities that will be provided.

Disbrow Breaks Kansas Marks

KANSAS CITY, MO., June 17—Watched by 8,000 spectators, Louis Disbrow, driving the Simplex "Zip" broke the 5-mile and 1-mile record for the circular track in this city yesterday. His time for 5 miles was 4:39.4 and for 1 mile 51.2 seconds, lowering the respective records made by Barney Oldfield in 52.8 seconds and 4:46.4. Disbrow's performance was the star event of the day, his records being established in trials against time.

Big Philadelphia-Wildwood Run

PHILADELPHIA, June 15—Under the auspices of the Board of Trade of the combined resorts of North Wildwood, Wildwood and Wildwood Crest, and engineered by Harry Harbach, one of the largest tours ever conducted by local automobilists is expected to leave the Hotel Ridgway, Camden, N. J., on July 3, with Wildwood, N. J., as the objective point, where on the following day racing will be held on the 1-mile speedway.

The run will be a secret time, secret intermediate control event, the first car leaving at 9 a. m. Several handsome prizes will be awarded. A special division of cars driven by ladies, and organized and marshaled by Mrs. D. Walter Harper, will participate in the run and for them two special prizes, a sterling silver chatelaine bag, and a chatelaine watch with wrist band will be provided.

Arranging Minnesota's State Tour

ST. PAUL, MINN., June 18—Judge E. W. Bazille, president of the Automobile Club of St. Paul, has been appointed chairman of the tours and contest committee of the Minnesota State Automobile Association by President C. E. Dutton. J. H. Prior, chairman of the sign boards committee of the Minneapolis club, is to be vice-chairman and pathfinder for the fourth annual tour to Winnipeg and return. The pathfinder started in a Mitchell car June 17 with H. H. Clark, of the Scarborough company, of Indianapolis, as checker, the Scarborough company to prepare



View of Speedway, looking toward the park

the route book for the tour and the state tour book also. It is planned to have the tour start July 20, Sunday at Winnipeg and return 3 days later.

Washington Endurance Run Postponed

WASHINGTON, D. C., June 15—For the second time the endurance run of the Automobile Club of Washington, scheduled for June 18-20, has been postponed, this time until September. The exact date will be determined later. The postponement was made because of a lack of entries. It is believed that by September many of the dealers will have their 1913 models and will enter them in the run, which will be through Maryland, Pennsylvania and Delaware.

National Ends Its Racing Season

INDIANAPOLIS, IND., June 17—George M. Dickson, general manager of the National Motor Vehicle Company, has announced the determination of his firm not to enter any National automobiles in any of the contests during the remainder of the season 1912. The reason given for the course taken by the National concern is that rush of business compels the company's forces to concentrate all efforts on factory work, while the numerous victories of the company's product enable the latter to be kept away from racing and other contests for such a time as is found necessary by the officers of the company.

Many Entries for Tacoma's Races

TACOMA, WASH., June 14—The list of entries for Tacoma's big motor races, as it stands to date, is as follows:

Fiat—120 H. P. Driver, Caleb Bragg. This car, driven by David Bruce-Brown, won the grand prize race at Savannah, Ga., 1911.
Fiat—90 H. P. Driver not named.
Napier—100 H. P. Driver not named. Owned by J. Armstrong, of Los Angeles.
Simplex—90 H. P. Driver not named.
Simplex—70 H. P. Driver not named.
Mercer—70 H. P. Driver not named.
Mercer—60 H. P. Driver not named.
Schacht—60 H. P. Driver not named.
Case—Size not named. Three to be entered.
Cole—30 H. P. Driver, "Red" Sebastian. Entered by American Automobile Company, Vancouver, B. C.
Reo—30 H. P. Driver, Earl Jackson. Entered by American Automobile Company, Tacoma.
Reo—30 H. P. Driver, Harry Krause, Los Angeles.
Ford—22 H. P. Driver, Frank Bennett, Tacoma. Entered by W. C. Baldwin, Tacoma.

In addition to these there are two Stutz cars at San Francisco, one of which Earl Cooper is scheduled to drive. The entry list closes June 28 and between now and then the committee expect to receive a number of further entries.

The first lot of racing cars, three Fiats, arrived in Tacoma June 10.

Arrangements have been completed with telephone and telegraph companies to have wires to the racing course. Four telephones will be placed on the grounds.

Tacoma's 5-mile automobile course has now been graded, leaving twenty-one working days for rolling the course, a week longer than the time estimated for that part of the work. The



Concrete machines at work in the new city



Railway entrance to the new city of Speedway
Making forms for concrete construction work

light rainfall of the past few days makes the conditions ideal for preparing the surface and the road will be packed as solid and smooth as a floor. Construction on the grandstand is well under way and it will be completed inside of two weeks. The seating capacity will be 16,000.

Bullard to Manage Desert Race

Official announcement was made during the past week that George P. Bullard, attorney-general of Arizona, will manage the next Los Angeles to Phoenix automobile race this fall. It has also been decided to hold the race over the new course of the Ocean-to-Ocean highway. Larger purses will be offered this year. Phoenix, Ariz., will put up \$2,000, Yuma \$500 and other cities along the route will contribute large amounts. In addition there will be a 10-mile race for large cars participating in the Los Angeles to Phoenix race and a 10-mile race for small cars, together with \$100 for the best mile record made by the large cars and \$100 for the best mile run by the small cars.

Crosses Australia in a Brush

MELBOURNE, AUSTRALIA, May 29—The first motor car trip entirely across the continent of Australia has been accomplished by Francis Birtles, who drove his 10-horsepower Brush run-about from Perth to Sydney. The distance is 2600 miles and was covered in 28 days and 2 hours. It was necessary to motor through 1000 miles of uninhabited country and 200 miles of sand-hills. The beds of many dried-up lagoons had to be crossed. Birtles' outfit included a bicycle, dog, tent, sand mats, shovels, guns and moving picture machines, in addition to the usual provision for food and water.

Efforts to cross Australia by motor car has been as numerous and as vigorous as some of the ocean-to-ocean trips in America. No less than a dozen attempts were unsuccessful, and until Birtles succeeded the journey was regarded as impossible. The country is particularly unsuitable for travel owing to constantly changing conditions and the scarcity of good water.



Participants in the Arizona Motor Company's Studebaker Sociability Run on the plains between Oak Fork and the Canyon

Studebaker Tour Great Success Ford Conquers Grand Canyon

Cars Thoroughly Tested Over Desert and Mountain Roads—Gasoline Consumption Figures

PHOENIX, ARIZ., June 13—SPECIAL TELEGRAM—Graham Riebling, Prescott, Ariz., was awarded first prize in the Studebaker sociability from this city to the Grand Canyon and return. A. D. Aiken, Wickenburg, Ariz., was second; R. C. Baker, third. The tour covered over 700 miles and the gasoline consumption of the three leaders was: Riebling, 29 gallons; Aiken, 40 gallons, and Baker 41 gallons. All three drove E-M-F cars.

The long run ended last evening. It was a tremendous success from start to finish, and gave the good roads movement in Arizona a tremendous impetus. Not one of the cars, excepting the two repair machines, had any serious trouble.

The Aiken and Riebling cars were the only ones that made every control within the specified time. John Northcutt, of Phoenix, made a splendid record until the canyon was reached. Tire trouble delayed him between the canyon and flagstaff, and after that only Aiken and Riebling were in the competition.

Mrs. Harry Kay was the only woman who drove in the tour. Maurice O'Neill, of Phoenix, crashed into a stump 100 miles north of Phoenix and damaged his steering gear.

There are two prizes for the winners. The first is a silver loving cup donated by the Studebaker Corporation, and the second is a set of tires given by the Arizona Motor Company, which holds the state agency for Studebaker machines.

The route from Phoenix to the canyon and return is 609 miles, but the machine took numerous side trips and traveled over 700 miles during the 9 days that they were absent from Phoenix. The side trips did not count in the competition for prizes.

Following is a complete list of the participating cars, their owners and drivers, in the order of their departure:

Pacemaker, E-M-F, Arizona Motor Company, owner; L. J. Ollier, driver.
 Press car, E-M-F, Arizona Motor Company, Norman Wormsley, driver.
 E-M-F, Eugene Brady O'Neill, owner; Maurice O'Neill, driver.
 E-M-F, Harry Lockett, owner; Frank Lang, driver.
 Flanders, M. P. White, owner and driver.
 E-M-F, R. C. Baker, owner and driver.
 E-M-F, A. J. Houston, owner and driver.
 E-M-F, Graham Riebling, owner and driver.
 E-M-F, James A. Johnson, owner and driver.
 E-M-F, John Northcutt, owner and driver.
 Flanders, R. Allyn Lewis, owner and driver.
 Service car, E-M-F, Arizona Motor Company, E. V. Brown, driver.
 E-M-F, A. D. Aiken, owner and driver.
 E-M-F, James Kennedy, owner and driver.
 E-M-F, W. J. Lembke, owner and driver.
 E-M-F, W. W. Henley, owner and driver.
 Flanders, W. H. Banks, owner and driver.
 Flanders, C. T. Lesueur, owner and driver.
 E-M-F, Arizona Motor Company, owner; Wayland Wood, driver.
 Service car, E-M-F, Arizona Motor Company.

Perilous Trip by Californian from Canyon Brink to the Very Edge of the Colorado River

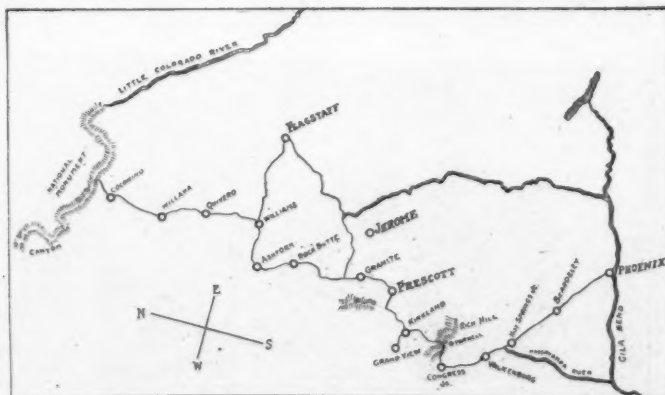
PHOENIX, ARIZ., June 18—The Grand Canyon of Arizona has been conquered by the automobile. B. L. Graves, manager of the California branch of the Ford company, last week drove a Ford car to the very edge of the Colorado river.

No one ever before attempted to drive an automobile into the canyon. Only two horse-drawn vehicles have ever been taken down the trail followed by Graves. The first buggy was driven into the canyon 24 years ago by John Nelson, Sr., and John Nelson, Jr., followed the Ford on horseback, with a supply of food, the day after it started. Had it not been for Nelson's thoughtful act the daring motorist might have perished.

The start was made from Peach Springs in the early morning. At Kingman, Graves had secured a supply of dynamite and several times it was necessary to blast a path for the Ford. Seven miles of the trail were literally buried under great boulders, many of which were rolled aside by main strength. They bumped over others that resisted their combined efforts. Once the car tipped over and only the fact that it rested on a big rock enabled it to be righted.

Intense heat in the depth of the canyon caused the gasoline to boil, but water was used to wet bags to place over the tank.

It took 7 hours to traverse the 22 miles through Diamond Canyon and along Diamond creek to the Colorado. When the river was reached there was no water, food or gasoline. The water in the Colorado was warm and thick with mud.



Showing route followed by Arizona Studebaker tour

A Dynamic Balance Carbureter

Designed to Secure Uniform Mixture Throughout Stroke

IN designing a carbureter, it must be remembered that the velocity of air flow varies, not only at different speeds of the engine, but also at different positions of the piston travel, the air suction being greater at the center of the piston stroke, accelerating from the commencement of the stroke and decelerating toward the end. Thus, a carbureter, to be efficient, must be balanced. Otherwise the gas mixture would vary throughout the whole stroke. It would probably be weak in hydrocarbon at the commencement and end of the stroke and too rich in the middle. In ordinary practice, this may, to a certain extent, balance itself, but the mixture will be stratified, and combustion will not be so regular as it will be if a gas of constant mixture is being delivered during the whole of the induction stroke.

This compensating action, due to the relative proportions of the passages, also takes effect in regard to the variations due to atmospheric and temperature conditions. The more dense the mixture in the tube, the greater the skin friction, and *vice versa*. Thus, in warm weather, when the gasoline is very fluid, the mixture in the compensation tube will be denser, but, on account of the greater skin friction, it will flow more slowly.

In the case of a carbureter described in a recent issue of *The Royal Automobile Club Journal*, the height of the gasoline column is so calculated that, in any given time, the same quantity will be delivered at the bottom. It is designed with a view to securing a dynamic balance between the gasoline and air as regards the height of the respective columns necessary to balance the momenta of the gasoline and air. The difference in skin friction between a gas and a liquid in passing through a tube is also taken into consideration.

The exterior simplicity of this carbureter is shown in Fig. 3 while a top view, showing the cover-retaining nuts U and V, is given in Fig. 2. As may be seen in the transverse section, Fig. 1, gasoline enters the concentric float chamber A through the union Q, its flow being regulated by the needle valve J, seating at P. The needle is operated by the annular float B, surrounding the jet tubes C and C₁ in the column D, through the medium of the lever O, one end of which engages with the collar M on the needle while the other bears against the top of the float. The lever is pivoted on the end of an adjustable spring bar N and is held against it by the screw K which is locked in adjustment by

the nut L. This screw regulates the float level, keeping the gasoline level with the bottom of the jet holes G and G₁.

The column D in the center of the float chamber is bored to contain the jet tubes C and C₁. In each of these tubes is a series of six small jet holes. Two of these are indicated at G and G₁. Two larger holes in the column D register with the two jet holes in C and C₁. These are situated in the upper extremity of two slots milled on the outside of the tubes which contain the jet tubes C and C₁ and surrounding these slots are fine wire gauze filters, one of which is shown at F. The bottom edges of C and C₁ are provided with six semi-circular slots, any of which can engage with pins E. The six jets holes of C and C₁ are of various sizes and any of them may be brought into register with the larger holes in the slots in the wall of the tubes. To do this, C and C₁ are lifted off their locating pins E and rotated to bring the right-sized jet opposite the holes in the slots. Their positions may be determined by index marks on the tops of the tubes shown in the plan view, Fig. 2. By selecting the right-sized jet holes, the carbureter is adjusted for any particular engine or running conditions.

The jet tubes C and C₁ communicate with the throttle chamber underneath by means of two ports. In the throttle chamber rotates the cylindrical throttle H controlled by the lever S. This barrel throttle can open up communication with either or both jet tubes. It is held in place by the spring clip X.

Hot air enters the carbureter through the pipe R communicating with the throttle H by means of ports. As the throttle opens up communication with the jet tubes C and C₁, hot air is admitted in the same proportion. The explosive mixture leaves through the motor intake pipe Y.

The initial air for spraying the gasoline comes in through the square openings T and E₁ at the top of the jet tubes.

When the throttle is fully opened, both jets are in action. As it closes, first one jet is cut off and then the other. When both are shut off, a port in the throttle registers with a port in the underside of the throttle chamber and pure cold air is drawn direct to the engine, not passing through the jet tubes.

All adjustments to the carbureter are external and can be made without dismantling any part while the carbureter is in operation and the engine running.

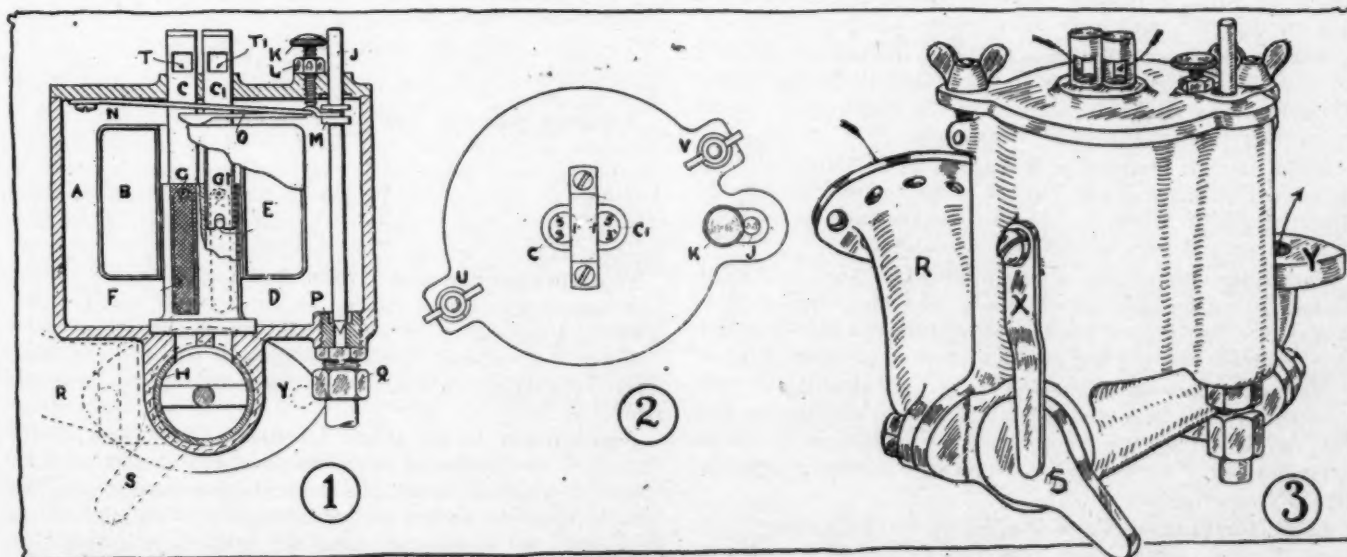


Fig. 1—Transverse sectional view

Fig. 2—Top view, showing indicators

Fig. 3—External view of carbureter

News of the Week Condensed



Portion of the fleet of 46 Alco trucks in the service of the American Express Co.

ORPHANS Richmond Club Guests—Members of the Richmond Automobile Club, Richmond, Va., took 300 orphans out in fifty-four cars on June 13, giving the children a sightseeing tour of the city.

Waite With Boston Thomas—George Waite has accepted a position as assistant sales manager of the Boston, Mass., branch of the E. R. Thomas Company.

Holly Boston Truck Manager Packard—Albert S. Holly has been advanced to the position of truck manager of the Alvan T. Fuller Company, Boston, Mass., agent for the Packard.

Re-elects Its Officials—At the recent annual meeting of the Boston Automobile Dealers' Association the following officers were re-elected: J. H. MacAlman, president; J. S. Campbell, secretary.

New Motor Line Opened—The W. H. Marble Company, of Brockton, Mass., has opened a motor line from that city to Brant Rock, a popular summer resort, and several cars are running back and forth daily.

Sukman Moves in Boston—The J. A. Sukman Company, Boston, Mass., has moved from the corner of Tennyson and Church streets to larger quarters in the Motor Mart, where it can carry a larger stock of accessories.

Smith Detroit Studebaker Manager—H. S. Smith has been appointed manager of the Detroit branch of the Studebaker. He succeeds A. Burwell, Jr., who has resigned to accept a position with the Metzger Motor Company.

Pathfinder Starts on Transcontinental Tour—A Pathfinder, driven by Scholler, with Mr. and Mrs. Westgard as passengers, has started on its transcontinental tour in which it is planned to cross the country three times this summer.

Vermont Club Election—At a recent meeting of the Chittenden County Automobile Club, held at Burlington, Vt., the following officers were elected: Walter B. Johnson, president; Dr. George B. Samson, vice-president, secretary-treasurer.

Lauth-Juergens in Cambridge—The Meyer Abrams Company, Boston, Mass., agent for the Lauth-Juergens trucks, has opened a service station on Vassar street, Cambridge,

140 by 90 feet, giving the company more than 12,000 square feet of floor-space.

Sturdy Plugs in Cedar Rapids—The Sturdy Manufacturing Company, Chicago, Ill., manufacturer of the Sturdy spark-plug, has granted the Cedar Rapids Sales Company, Cedar Rapids, Ia., the exclusive sales-right of Sturdy plugs in the state of Iowa.

Denver's Chalmers Tour—Denver will again have a Chalmers owners' consistency tour. This event has been held twice. The third annual tour will be held June 12, 13 and 14 and will consist of a run from Denver to Canyon City, Col., and return.

Pennsylvania Health Department's Trucks—The Pennsylvania state health department will purchase two large automobile trucks for use between Mount Alto station and the sanitarium. The trucks will be used for hauling coal and other supplies up the mountain.

John and Arthur Take Disco—John Mahoney and Arthur Watkins, generally known as the John and Arthur Company, have taken the New England agency for the Disco self-starter, the branch operated by the Aristos Company in Boston, Mass., having been closed.

Notables Address Pacific Convention—Governor Hiram Johnson, of California, and P. J. Walker, president of the California State Automobile Association, have accepted invitations to address the Pacific Highway Convention, which will be held in San Francisco, August 5, 6 and 7, in the Convention Hall of the St. Francis Hotel.

First Transcontinental Truck Delivery—The first transcontinental delivery in history by motor truck will be made when a 3-ton cargo of goods will be sent by Charles W. Young & Company, of Philadelphia, Pa., to the Carlson Currier Company, a concern in Petaluma, Cal., in an Alco truck.

Pennsylvania Issues 46,000 Licenses—The automobile division of the Pennsylvania state highway department has issued over 46,000 licenses to automobile owners in the state. This eclipses the record of the entire year of 1911 by several thousand. It is expected that the number will run close to 60,000 this year.

Pray Is Secretary—R. F. Pray has been elected secretary-treasurer of the Akeley, Minn., club just formed.

Montreal Tire Exchange—The Montreal Tire Exchange is a new concern dealing in new and second-hand tires.

Wagner Sales Manager Electric Company—Howard E. Wagner has been appointed sales manager of the Buffalo Electric Vehicle Company, Buffalo, N. Y.

Fisher Canadian Studebaker Manager—Frank E. Fisher has been appointed manager of the Studebaker Corporation of Canada, Ltd., at Walkerville, Ont.

Columbus Arranging Race Meet—The Columbus Automobile Club, Columbus, O., has arranged to give a race meet at the Columbus Driving Park August 25.

Buffalo-East Aurora Automobile Line—The East Aurora Motor Car Company has inaugurated automobile service between Buffalo and East Aurora, fare being 50 cents.

Lockport's Orphan Day—Orphans' Day recently observed at Lockport, N. Y., proved very successful, 200 children being taken in automobiles about the city and surrounding country.

Cars for Public Works Foremen—Foremen of the Buffalo, N. Y., Public Works Department are soon to be provided with three automobiles for use in covering the city more thoroughly.

Second-Hand Car Show Failure—Boston's first, and probably its last, used or second-hand car show, for which so much was predicted by its promotor, O. D. Corbett, proved a colossal failure.

Selects Show Dates—The Boston Commercial Vehicle Association held a meeting recently at which it was decided to hold the annual motor truck show at Mechanic's building March 19-23, 1913.

Buffalo's Large Automobile Registration—The Buffalo, N. Y., office for the registration of automobiles has issued numbers for 20,919 machines this year and granted licenses to 4,150 chauffeurs.

Denniston Company in Bankruptcy—A bankrupt sale of the business and equipment of the Denniston Company, body makers, Buffalo, N. Y., will start at the company's office at 12 o'clock noon of Monday, June 24.

Quaker City's Orphans' Day—The fifth annual Orphans' Day outing of Philadelphia was held on June 13. There were 1,265 children, gathered from sixteen institutions. All were given an automobile ride into the country.

Toledo Purchases Kelly Truck—The Toledo, O., board of control has purchased a 2-ton Kelly motor truck from the Kelly Motor Truck Company, Springfield, O., for use in hauling street materials and collecting street sweepings.

Habersham Washington Studebaker Manager—Edward H. Habersham has been appointed manager of the Washington, D. C., wholesale branch of the Studebaker Corporation, succeeding Walter C. Vliedt, who has been transferred to Fargo, N. D.

Election in Winthrop—New officers of the Automobile club of Winthrop, Minn., are: President, Peter Morton; vice-president, A. L. Olson; secretary, G. E. Larson; governors, Peter Morton, A. L. Olson, G. E. Larson, G. E. Strout and F. N. Nelson.

Wells Resigns From Thomas—Edward Wells has resigned his position as assistant sales manager of the E. R. Thomas Motor Car Company, Buffalo, N. Y., to engage in the automobile business direct. He will assume control of the State Garage, Jamestown, N. Y.

Colver Heads Locomobile Truck Branch—Fred F. Colver will take charge of the new truck department of the Locomobile Company at the New York City branch. Mr. Colver will have charge of all truck business, not only in the New York district, but also in the surrounding territory.

Truck Club Members Meet—There will be a regular meeting of the New York City Motor Truck Club on Wednesday evening, June 19. It will be held in the main dining room of the Hotel Cumberland, Broadway and Fifty-fourth street, and will be preceded by an informal dinner.

Oregon's Large Automobile Registration—Up to June 1 over 8,000 automobiles and motorcycles have been registered in Oregon. This is an increase of 2,000 over the entire registration for 1911. There is \$8,000,000 invested in automobiles and accessories in that state at the present time.

Watertown Motor Club Organized—The Watertown Motor Club has been organized at Watertown, Wis., with sixty members and fifty more in prospect. Officers have been elected as follows: President, A. R. Barker; vice-president, Dr. A. Meyer; secretary, Max G. Kusel; treasurer, Max Rohr.

Harrisburg Club Improving Roads—At a recent meeting of the Motor Club of Harrisburg, Pa., each member of the committee on good roads was assigned to a certain section of the roads leading into Harrisburg to look after the condition of the same and report to the club all roads that are in need of immediate repair.

Overland Wins Hill-Climb—An Overland driven by Tom McKelvy recently won the free-for-all \$500 purse at the hill-climb on Toll House hill, Fresno, Cal. The hill is 7 1-2 miles long, 3 miles of which is 33 per cent. grade. The distance was made in 18 minutes and 28 seconds—breaking the previous record by 2 minutes and 2 seconds.

Indiana Four States Tour—There have been approximately forty entries for the Indiana Four States Tour to be conducted by the Indiana Automobile Manufacturers' Association, starting from Indianapolis on July 9. The route, which will lie through Indiana, Ohio, West Virginia and Kentucky, will be about 1,400 miles long.

Dinner Tendered Haynes—A dinner was given recently by President H. H. Franklin, of the H. H. Franklin Manufacturing Company and the Franklin Automobile Company, Syracuse, N. Y., to retiring factory manager F. J. Haynes. Mr. Haynes was presented with a handsome gold watch as a token of the esteem in which he was held by the company with which he was associated.

New Automobile Agencies

PLEASURE CARS

Place	Car	Agent
Assumption, Ill.	R-C-H.	A. J. Vilmure.
Bamberg, S. C.	Franklin	Decania Dowling.
Cleveland, O.	Velie	Auto Sales Company
Columbus, O.	Alco	M. P. Murman.
Deland, Fla.	Cole	R. H. Smith.
Erie, Pa.	Cole	Porter-Burgess Motor Company
Follensbee, W. Va.	Cole	H. B. Mahon.
Galt, Ont.	Ford, Russell, Reo.	Western Ontario Sales Company.
Gorham, N. H.	Cole	Wm. E. Morse.
Granville, N. Y.	R-C-H.	G. A. Walker.
Hokomie, Ill.	Cole	Harvey Case.
Kankakee, Ill.	Franklin	Lincoln Garage and Repair Company.
Leesburg, Fla.	Cole	Sanders & Dutton.
Macon, Ga.	Cole	Cole Macon Agency.
Nashville, Tenn.	Cole	Nashville Saddlery Company.
Ottawa, Can.	American	Ottawa-Beach Motor Company.
Paducah, Ky.	Cole	J. A. Rudy & Sons.
Rushville, Ind.	Franklin	Sanitary House Cleaning Company.
Sacramento, Cal.	Franklin	Stanley Bias.
Saskatoon, Sask.	Alpena, R-C-H.	Hoffman & Horan.
St. Augustine, Fla.	Cole	St. Augustine Machine Works.
St. Louis, Mo.	Herreschoff	Southern Auto & Machinery Company.
Taxarkana, Ark.	Cole	A. B. Starbird.
Toronto, Can.	Abbott-Detroit	L. M. Rothburn.
Washington, D. C.	Henderson	Matheson Motor Car Company.
Wilbur, Wash.	Everitt	John Morkey.

Truax Elected President—Officers have been elected by the new Breckenridge, Minn., club as follows: President, P. E. Truax; secretary, H. T. Zimmerman; treasurer, H. L. Shirley.

Essenkay's New St. Louis Salesroom—The Essenkay Sales Company, handling the Essenkay tire filler, J. P. Kavanaugh, manager, has taken a salesroom at 3029 Locust street, St. Louis, Mo.

Monogram Oils in San Francisco—The Pacific Coast branch of the New York Lubricating Oil Company, San Francisco, Cal., proprietor of Monogram oils, has moved to 516 Second street.

Oakland Franklin Service Station—A well-appointed service branch has been opened in Oakland, Cal., by the Franklin Automobile Company. Peter Callender, an expert Franklin repairman, is in charge.

Bolter Heads Itasca Club—The Automobile Club of Itasca county, headquarters at Grand Rapids, Minn., have elected officers as follows: President, L. M. Bolter; vice-president, E. L. Buck; secretary-treasurer, A. W. Sitz.

Rushmore Manager Neate & McCarthy—G. D. Rushmore, Portland, Ore., has been appointed sales manager for Neate & McCarthy, Portland, distributors for the Locomobile, Hudson and Ohio pleasure cars and Kelly trucks.

Milwaukee Minimizing Reckless Driving—The efforts of the Milwaukee Automobile Club to minimize the reckless driving evil in Milwaukee is bearing fruit, as only three arrests for speeding have been made from June 1 to 16.

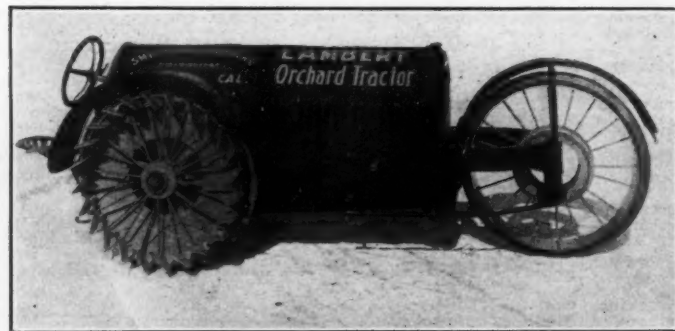
Hancock Club Selects Leaders—Frank Wilcox has been elected president of the club at Hancock, Minn.; vice-president, M. L. Ransom; secretary-treasurer, H. F. Frisbee; governors, R. L. Stebbins, John A. Johnson, Chris Rygh and A. J. Maylett.

Garage Permits Must Be Obtained—In Los Angeles, Cal., permits must be obtained from the board of fire commissioners before a garage may be erected or gasoline used, and the plans of each building and tank or tanks submitted to the fire marshal.

Cramer in Temporary Office—V. C. Cramer, New England branch manager for the Flanders colonial electric, has opened temporary offices at 883 Boylston street, Boston, Mass., and later will take possession of his new offices and salesrooms in the automobile district.

Graceville Club Holds Election—The new club at Graceville, Minn., has elected the following officers: President, G. V. Hickey; vice-presidents, Dr. C. I. Oliver, H. L. Day, Dr. B. M. Randall, Kash Frozine and J. A. McRae; secretary-treasurer, Rev. R. V. Kennedy.

Briggs Resigns From Franklin—Thomas L. Briggs, for the past two years assistant advertising manager of the Franklin Automobile Company, has resigned to accept a position on the advertising staff of the Remington Arms-Union Metallic Cartridge Company.



Lambert orchard tractor made by Buckeye Mfg. Co.



Pierce truck used by Detroit creamery

Club Elects Officers—The Automobile Club of Austin and Mower counties, Minn., has elected officers as follows: President, J. Z. Rogers; vice-president, Dr. C. M. F. Rogers; secretary, J. L. Mitchell; treasurer, M. F. Erdman. The club owns several drags and has 14 miles of road under repair.

Timken's Alluring Cash Offer—The Timken Roller Bearing Company, Detroit, Mich., will distribute \$200 in cash prizes to the persons reporting cars which have traveled the greatest number of miles on Timken roller bearings in front or rear wheels, without repair or replacement. The contest closes August 31.

Clubs Join State Association—Seven clubs have been admitted to the Minnesota State Automobile Association—those of Graceville, Hancock, Akeley, Moorhead, Breckenridge, Winthrop and Itasca county. Clubs to join later are forming in Fergus Falls, Glenwood, Stewart, Jasper, Wadena, Willmar, Appleton, Granite Falls and Candy. The membership is now fifty clubs and 3,000 individuals.

Truck Work Recorded—An accurate record is kept of the work done each day by a 5-ton, worm-driven Pierce-Arrow truck owned by Towar's Wayne County Creamery, Detroit, Mich. The truck's work does not differ much from day to day, so it is possible to show how many wagons it has replaced and the daily mileage. Two shifts of men are employed to operate the truck, owing to the long hours of service.

Automobile Incorporations

AUTOMOBILES AND PARTS

ALLENTOWN, PA.—Penn Unit Manufacturing Company; capital, \$500,000; to manufacture commercial automobiles. Incorporators: S. Bruce Somervell and others.

BARTLESVILLE, OKLA.—Burr Petroleum Company; capital, \$10,000; to exploit petroleum wells. Incorporators: C. E. Curlingame, H. J. Holm.

BUFFALO, N. Y.—Brooks Motor Car Company; capital, \$100,000; to manufacture automobiles. Incorporators: Herman G. Rechtsteiner, George B. North, B. O. Kerr.

BUFFALO, N. Y.—Stewart Motor Corporation; capital, \$350,000; to manufacture automobiles of all types. Incorporators: Charles J. Bork, Bernhard L. Fisher, William F. Strasmer.

CHARLOTTE, N. C.—Auto Sales Company; capital, \$25,000; to engage in the automobile business. Incorporators: E. T. James, John G. Weber.

GRAND RAPIDS, MICH.—Grand Rapids Motor Realty Company; capital, \$40,000; to own and rent an automobile clubhouse. Incorporators: Charles A. Phelps, Alvish W. Brown, G. A. Henricks, Elmer Kinsey.

INDIANAPOLIS, IND.—Ideal Motor Car Company; capital, \$100,000; to manufacture pleasure automobiles. Incorporators: Harry C. Stutz, Henry F. Campbell, William D. Myers, William F. Glickert, Everett L. Dupree.

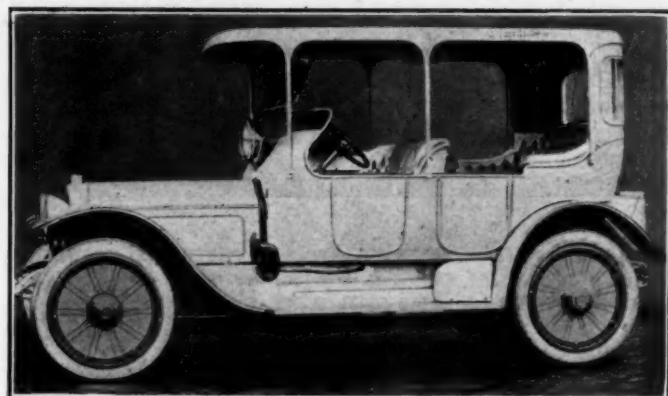
MEMPHIS, TENN.—Fiat Motor Car Company; capital, \$20,000; to engage in the automobile business. Incorporators: O. C. Fleumer, Nelson E. Taylor and others.

NEWARK, N. J.—Newark Auto Truck and Manufacturing Company; capital, \$500,000; to manufacture automobiles, especially commercial vehicles. Incorporators: L. W. Babbage, R. H. Poole, J. T. Walsh.

NEW YORK CITY.—Henry Engineering Company; capital, \$29,000; to manufacture parts for automobiles. Incorporators: George L. Henry, Harry W. Badenhausen, Myron F. Hill.

TORONTO, CAN.—General Motors Company of Canada, Ltd.; capital, \$40,000; to conduct an automobile business.

WILMINGTON, DEL.—Amplex Motor Car Company; capital, \$1,000,000; to manufacture automobiles. Incorporators: W. J. Maloney, N. P. Coffin, E. E. McWhiney.



Special body designed by a Boston Peerless owner

Baltimore News Sociability Run—The sociability run of the Saturday Afternoon Automobile Edition of the *Baltimore News* from Baltimore, Md., to Annapolis, June 15, was a great success, 202 cars participating.

Boston's Orphans' Day Outing—At the recent annual outing for the blind, crippled and orphaned children of Boston, Mass., under the auspices of Secretary Chester I. Campbell, of the Boston Automobile Dealers' Association, nearly 2,000 children were taken to Sharon. There were about 300 cars used for the outing.

Truck on Electric Farm—On the Electric Farm of the Boston, Mass., Edison Company electricity does everything. It cuts the fodder, milks the cows, washes the dishes, pumps the water, churns the butter and finally takes the products of the farm to the city in a G.M.C. electric truck.

An Interesting Special Design—The Boston, Mass., branch of the Peerless Motor Car Company recently completed a 38-Six of special design. The spokes of the wheels are entirely covered with metal disks, concave from hub to rim and painted to represent the concealed spokes. The aluminum dash is unusually high and is surmounted by a celluloid panel 6 inches high. A slight concavity in the center of the dash permits the arrangement of an extra headlight so that every time the steering wheel is turned it swings the light in the same direction. The top is stationary and its supports are hollow, serving as drain pipes in rainy weather.

Automobile Incorporations

GARAGES AND ACCESSORIES

AKRON, O.—Hadfield Rubber Company; capital, \$10,000; to manufacture all kinds of rubber goods. Incorporators: John Hadfield, Hugh R. Hadfield, Maud M. Hadfield, Ida Hadfield, Joe Hadfield.

BROOKLYN, N. Y.—Non-Destructible Tire Protector Company; capital, \$25,000; to manufacture a tire protector. Incorporators: M. Pelz, W. Weiner, H. Seufert.

CHICAGO, ILL.—Windsor Park Garage; capital, \$2,000; to conduct a general automobile and garage business. Incorporators: Sidney E. Levy, Joseph D. Irose, Walter A. Rooney.

EAST PALESTINE, O.—O. & H. Tire Company; capital, \$5,000; to manufacture, deal in and import tires for automobiles. Incorporators: J. A. Oatsdean, A. L. Shumate, C. A. Oatsdean, C. F. Hanoble, A. S. Mauk.

HENDERSON, KY.—Park Garage Company; capital, \$1,200; to conduct a garage and repair shop. Incorporators: J. L. Jones, J. R. Sigler.

INDIANAPOLIS, IND.—Central Garage Company; capital, \$5,000; to conduct a garage. Incorporators: Walter Howe, Kirke Howe, H. R. Sterling.

INDIANAPOLIS, IND.—Consumers' Carbide Gas Company; capital, \$100,000; to manufacture acetylene gas machines. Incorporators: A. J. Schmidt, Robert Clark, C. W. Scroggin, O. K. Stuart.

NEW YORK CITY.—Harlem River Garage and Repair Company; capital, \$900; to conduct a garage and repair shop. Incorporators: Frank D. Rice, William T. Hookey.

NIAGARA FALLS, N. Y.—Esco Sales Company; capital, \$10,000; to manufacture and deal in automobile accessories and machinery. Incorporators: Christian Gombert and others.

SYRACUSE, N. Y.—Mohawk Tire Company; capital, \$6,090; to manufacture and deal in tires. Incorporators: Henry J. Moses, Winifred Rice, Clarence B. Rice.

CHANGES OF CAPITAL

CLEVELAND, O.—B. M. O. Motor Truck Company, name changed to Standard Motor Truck Company.

CLEVELAND, O.—Park Motor Car Company; capital increased from \$10,000 to \$15,000.

News of the Garages

Woonsocket Has a New Garage—John F. Letendre has opened the Hamlet Avenue Garage at Woonsocket, R. I.

Duty-Polen Garage in Marietta—Herbert Duty and Clarence R. Polen have opened the Standard Garage at Second street, Marietta, O.

Tampa's New Garage Opens—Harris & Giddens, Tampa, Fla., have opened their new garage on the southeast corner of Lafayette street and Florida avenue.

Holyoke Garage Changes Hands—The Holyoke Garage, Holyoke, Mass., has been leased by H. J. Barriman. It was formerly conducted by Victor E. Menard.

Railroad Builds in Harrisburg—The Pennsylvania Railroad has started work on the erection of a garage and supply house on Maclay street, Harrisburg, Pa.

Krit to Open in Baltimore—The Beehler & Ogden Company, Krit agent in Baltimore, Md., has opened a new garage and service department, located at Lexington and Carey streets.

Barker to Build in Hartford—Charles Barker, of the Barker Automobile Company, Hartford, Conn., has leased a plot of land on Riverside avenue and there will build a large garage.

Lease Ward House for Garage—Peter McShane and Robert Greenaway, agents for the Marion car in Dover, N. H., have leased the ward house used for elections for garage purposes.

Ludington Deal Consummated—Donald McVichie has purchased the garage of the Ludington Auto & Supply Company, Ludington, Mich., which was formerly owned by A. F. Keseberg.

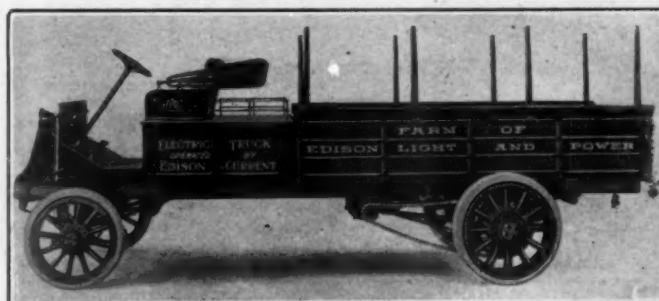
Cleveland to Have Another Garage—Contracts have been placed for a new two-story garage to be built at 600 East Sixty-third street, Cleveland, O. The building will be 36 by 50 feet.

Baltimore Garages Multiplying Fast—A \$15,000-garage is being built for Moses Salmson, Whitelock street, Baltimore, Md. It will cover a ground of 50 by 150 feet, contract having been awarded to the Garage Construction Company.

Yos Opens in Syracuse—George E. Yos, Syracuse, N. Y., agent for the Abbott-Detroit cars, has opened a new garage capable of taking in 100 cars. The garage is built of cement and brick and includes a salesroom and a repair department.

Establishment Will Be Rebuilt—The Buick Garage, of Hartford, Conn., recently destroyed completely by fire, will be rebuilt at once, according to David B. Roberts, its manager. The loss, which was fully covered by insurance, amounted to \$14,000.

Central Garage to Be Finished Soon—The new addition to the Central Garage, of Scottsdale, Pa., will be finished within a few days. It will be 30 by 70 feet, giving the garage a storage capacity for thirty cars. The equipment of the garage will be made strictly up-to-date.



G.M.C. truck used on Boston Edison Co.'s electric farm

Newest Ideas *among the* Accessories

New Valve Spring Remover; Indicator Tail Light; Two-Layer Cord Casing; Pressed-Steel Folding Chair; Multiple Lubricants Storage System and Pumps; Seat-Operated Spring Engine Starter

Bryant Valve Spring Remover

A SIMPLE valve spring remover is made by Stevens & Company, 375 Broadway, New York. The device, Fig. 2, is composed of a rack R ending in a double prong P, and a pinion which is pivoted inside the brass casting B on a pin held in place by the squared member S. A key K fits on S, and, by turning it, the rack and pinion are operated. A lever P actuating a pawl which may be made to mesh either way with the rack R may be thrown to either side, so as to permit the movement of the pinion on the rack in one direction or the other. In operation, the prongs P₁ and P are inserted into the first and last coils of the spring, respectively, so that, by properly working the remover, the spring is compressed or expanded, taking all pressure off the valve, which may then be easily taken out of its place and off the seat by removing the pin holding it to the spring rest.

Tel-Ta-Stop Indicator Light

Miller & Davis, 24 Chambers street, New York City, have manufactured a new combination indicating tail lamp and number plate. The device consists of a box which is attached to the number plate bracket and which carries at its lower end the rear number plate. Above the latter a lamp is arranged which radiates light down on the number plate and upward into the interior of the indicator box. The latter contains three coils which are wired to a battery and to a three-button switch. Each coil is equipped with an armature which is attracted thereby when a current passes through the coil, and each armature carries a plate marked Right, Left or Stop, respectively. By pressing the right- or left-hand button the signal Right or Left, respectively, appears in the indicator box, while the pressing of the center button raises a plate marked Stop. The switch for regulating the indications appearing on the device may be attached to any part of the car, preferably the dashboard or steering wheel, where it is in easy reach of the driver without obstructing him in his work. Correct wiring and a live battery are the only requisites.



Fig. 1—Diamond Silvertown cord tire with three-ring rubber tread

Diamond Silvertown Cord Tire

The latest product of the Diamond Rubber Company, Akron, O., is the Silvertown Cord tire, Fig. 1. This tire, different from ordinary casings, is built up of Sea Island cotton cord arranged in two layers on top of a frictioned tire base. Above the double cord layer is a rubber cushion and above the latter is the pure rubber tread. As Fig. 1 shows, both cord layers are constructed with the cord at an angle of 45 degrees to the circumference of the tire, and at right angles to one another. They are wound over steel hooks incorporated in the bead of the frictioned base which determines the shape of the casing, while the cord layers give rigidity and strength. The cord layers are

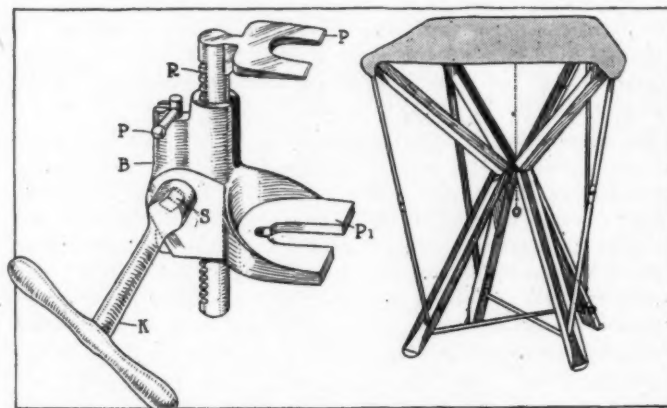


Fig. 2—Bryant valve spring remover. Fig. 3—Glendale folding chair

frictioned to the base, to each other and to the rubber cushion which is arranged on them, resulting in a very tough casing. The tire tread is also singularly shaped, as is illustrated by side and end view of the casing. The tread surface consists of two rings of rubber molded to stand out from the plain annular surface of the casing. These rings are about 3-8 inch wide and deep and are separated by a hollow, ring-shaped space, which tends to cool the tread during travel. The effect of this tread, as claimed by the Diamond company, is that the Silvertown Cord tire keeps very much cooler than a plain or studded tread does in operation, and, while the double ring provides the necessary surface for traction, it obviates all unnecessary friction. According to the manufacturer, if an automobile is equipped with plain and Silvertown Cord casings in turn, and allowed to coast down a hill, it will glide 20 per cent. farther when fitted with the new tire. Owing to the costlier method of manufacture and its greater serviceability and durability, the Silvertown product is somewhat higher priced than the ordinary Diamond article.

Glendale Steel Folding Chair

Lightness and strength are combined in the Glendale steel folding chair, Fig. 3. This portable seat is made of pressed steel of angle section, weighs 2 pounds and is capable of sup-

porting 400 pounds. The four main carriers are made in two parts each, which are hinged together and braced by a pivot; the latter is in turn made of two hinging portions, so that the entire chair may be folded into a short, round package which may be carried in a fabric cover, giving it the appearance of a music roll. It may be rapidly folded or unfolded and is therefore a useful addition to the equipment of a tourist. It is made by the Glendale Manufacturing Company, 152 West Thirty-fourth street, New York City.

A Multiple Oil Pump Equipment

A multiple oil pump equipment, designed for the use of establishments where various grades of fuels and lubricants have to be constantly handled in fixed quantities, is made by the Monitor Manufacturing Company, Landisville, Pa. The equipment shown in Fig. 4 consists of five individual and separate tanks held in a unit frame. Each tank is equipped with an inlet for charging, and a measuring pump for discharging its contents. The pump is fitted with a lock handle; all the moving parts are inclosed.

Volkmar Spring Engine Starter

A recent addition to the line of spring-operated self-starters is the type shown in Figs. 5 to 7, which is made by the Volkmar Auto Starter Company, 203 Broadway, New York City. The appearance of the starter on the car is shown in Fig. 6, where it is contained in a brass cover which is arranged over the mechanism. The latter consists of a shaft coupled to the crankshaft, a set of gears connected to the latter and a clutch arrangement by means of which the gearset may be engaged with or disengaged from a sleeve turning on the shaft and independently of same. Fig. 5 illustrates the starter with the cover removed. The shaft S is coupled at one end to the crankshaft, while the other end carries a slidable dog-clutch member D normally out of engagement with a member D1 adapted to engage it. The dog D1 is keyed to a shaft carrying the gear 1, so that if D and D1 are engaged and driven by the engine the drive is transmitted through the gears 1, 2, 3, 4, 5, 6. The last-mentioned gear, 6, has an extension in the interior portion of the starter and there meshes with a gear on the sleeve to which one end of the starter spring is fixed, while its other end is attached to the starter housing. The spring is 12 feet long and 2 inches wide; as soon as it is wound tightly, being held so by a pawl and ratchet arrangement, the dogs D and D1 are disengaged by

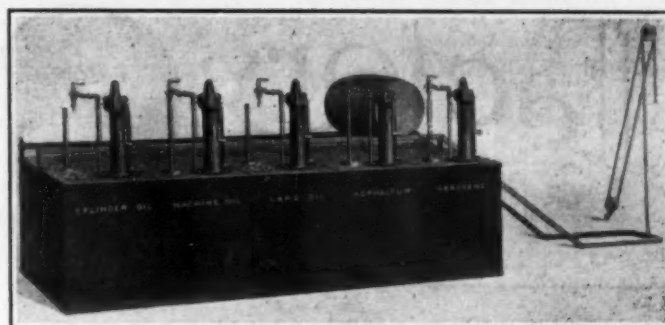


Fig. 4—Monitor multiple oil storage and pumping equipment

a Geneva gear C, which is shown in detail in Fig. 7. The end of the sliding dog D contained in the starter housing is fitted with another clutch face adapted to engage a similar member of the face of the spring sleeve or arbor. The Geneva gear, by means of which the dog D may be shifted either way, is connected by means P to a pedal on the dash, with the adjustment A so arranged that the gear G holds the dog D in neutral by a suitable position of the lever L. When the pedal is pressed down by the driver, the upper end of the lever L is forced forward (to the right in the figure), the lower end of the lever being drawn back by the spring S1. This throws the invisible end of the dog D into mesh with the clutch member on the spring sleeve, releasing at the same time the pawl from the ratchet, and causes the crankshaft extension, to which the dog D is keyed, to be rotated from six to twelve times at high speed. When the entire power stored in the spring is exhausted and the engine has started, the Geneva gear automatically shifts the dogs D and D1 into mesh, so that the rotation of the engine again winds the starter spring, whereafter the dog D is automatically shifted to neutral. Should the engine refuse to start in response to the action of the starter, because of some defect of ignition or carburetion system, the next thing to do is to eliminate the disturbing condition and then wind the spring by means of the crank W, Fig. 5, which is adapted to engage the inner face of the gear 1. The starter is then cranked, that is, the spring is wound about 20 revolutions. In this operation, there is no danger to the person operating the starter as the latter and the motor are not operatively connected while the cranking is being done.

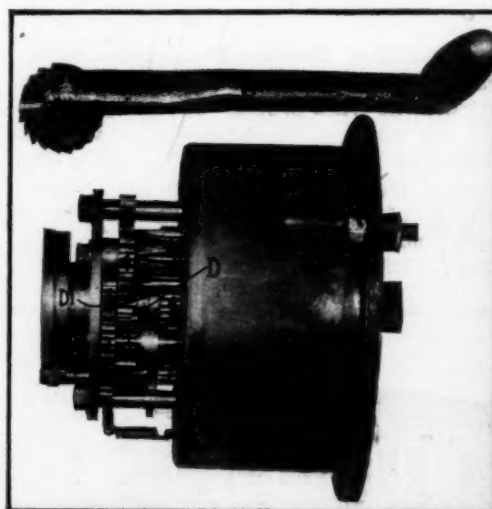


Fig. 5—Mechanism of the Volkmar starter with brass cover removed. Gearset 1, 2, 3, 4, 5, 6 serves to wind the starter spring inside the housing; dogs D, D1, engaging when pedal is pressed to start motor; Geneva gear G regulates relation of dogs; S, motor shaft



Fig. 6—Front view of Volkmar spring starter in place on a car

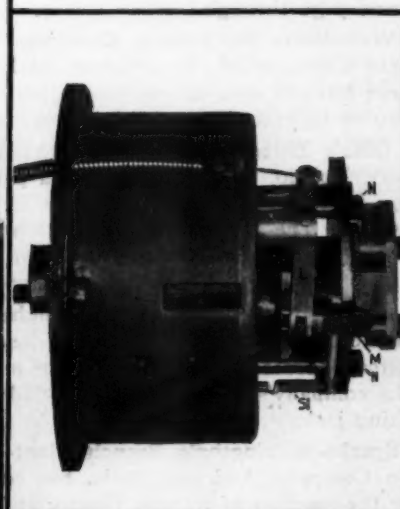


Fig. 7—Pedal side of the Volkmar starter. The spring tension is released by pressing P forward by the pedal on the floorboard, pushing the lower end of L toward the left and coupling sleeve and shaft S

Newest Ideas among the Accessories

New Valve Spring Remover; Indicator Tail Light; Two-Layer Cord Casing; Pressed-Steel Folding Chair; Multiple Lubricants Storage System and Pumps; Seat-Operated Spring Engine Starter

Bryant Valve Spring Remover

A SIMPLE valve spring remover is made by Stevens & Company, 375 Broadway, New York. The device, Fig. 2, is composed of a rack R ending in a double prong P, and a pinion which is pivoted inside the brass casting B on a pin held in place by the squared member S. A key K fits on S, and, by turning it, the rack and pinion are operated. A lever P actuating a pawl which may be made to mesh either way with the rack R may be thrown to either side, so as to permit the movement of the pinion on the rack in one direction or the other. In operation, the prongs P₁ and P are inserted into the first and last coils of the spring, respectively, so that, by properly working the remover, the spring is compressed or expanded, taking all pressure off the valve, which may then be easily taken out of its place and off the seat by removing the pin holding it to the spring rest.

Tel-Ta-Stop Indicator Light

Miller & Davis, 24 Chambers street, New York City, have manufactured a new combination indicating tail lamp and number plate. The device consists of a box which is attached to the number plate bracket and which carries at its lower end the rear number plate. Above the latter a lamp is arranged which radiates light down on the number plate and upward into the interior of the indicator box. The latter contains three coils which are wired to a battery and to a three-button switch. Each coil is equipped with an armature which is attracted thereby when a current passes through the coil, and each armature carries a plate marked Right, Left or Stop, respectively. By pressing the right- or left-hand button the signal Right or Left, respectively, appears in the indicator box, while the pressing of the center button raises a plate marked Stop. The switch for regulating the indications appearing on the device may be attached to any part of the car, preferably the dashboard or steering wheel, where it is in easy reach of the driver without obstructing him in his work. Correct wiring and a live battery are the only requisites.

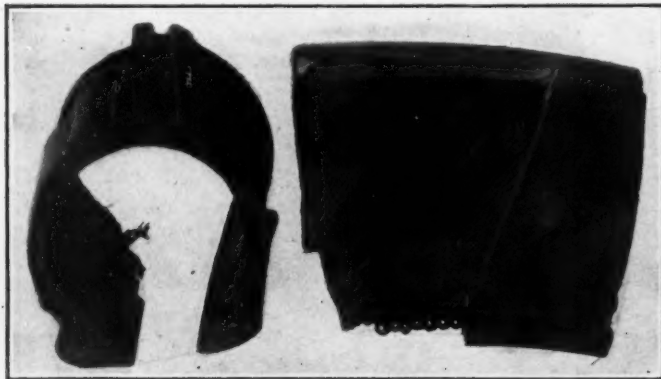


Fig. 1—Diamond Silvertown cord tire with three-ring rubber tread

Diamond Silvertown Cord Tire

The latest product of the Diamond Rubber Company, Akron, O., is the Silvertown Cord tire, Fig. 1. This tire, different from ordinary casings, is built up of Sea Island cotton cord arranged in two layers on top of a frictioned tire base. Above the double cord layer is a rubber cushion and above the latter is the pure rubber tread. As Fig. 1 shows, both cord layers are constructed with the cord at an angle of 45 degrees to the circumference of the tire, and at right angles to one another. They are wound over steel hooks incorporated in the bead of the frictioned base which determines the shape of the casing, while the cord layers give rigidity and strength. The cord layers are

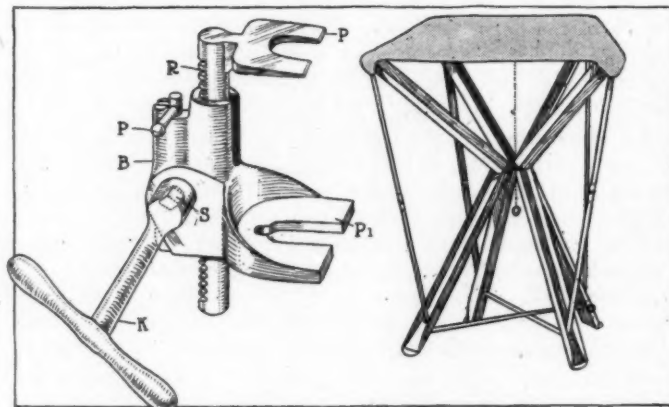


Fig. 2—Bryant valve spring remover. Fig. 3—Glendale folding chair

frictioned to the base, to each other and to the rubber cushion which is arranged on them, resulting in a very tough casing. The tire tread is also singularly shaped, as is illustrated by side and end view of the casing. The tread surface consists of two rings of rubber molded to stand out from the plain annular surface of the casing. These rings are about 3-8 inch wide and deep and are separated by a hollow, ring-shaped space, which tends to cool the tread during travel. The effect of this tread, as claimed by the Diamond company, is that the Silvertown Cord tire keeps very much cooler than a plain or studded tread does in operation, and, while the double ring provides the necessary surface for traction, it obviates all unnecessary friction. According to the manufacturer, if an automobile is equipped with plain and Silvertown Cord casings in turn, and allowed to coast down a hill, it will glide 20 per cent. farther when fitted with the new tire. Owing to the costlier method of manufacture and its greater serviceability and durability, the Silvertown product is somewhat higher priced than the ordinary Diamond article.

Glendale Steel Folding Chair

Lightness and strength are combined in the Glendale steel folding chair, Fig. 3. This portable seat is made of pressed steel of angle section, weighs 2 pounds and is capable of sup-

porting 400 pounds. The four main carriers are made in two parts each, which are hinged together and braced by a pivot; the latter is in turn made of two hinging portions, so that the entire chair may be folded into a short, round package which may be carried in a fabric cover, giving it the appearance of a music roll. It may be rapidly folded or unfolded and is therefore a useful addition to the equipment of a tourist. It is made by the Glendale Manufacturing Company, 152 West Thirty-fourth street, New York City.

A Multiple Oil Pump Equipment

A multiple oil pump equipment, designed for the use of establishments where various grades of fuels and lubricants have to be constantly handled in fixed quantities, is made by the Monitor Manufacturing Company, Landisville, Pa. The equipment shown in Fig. 4 consists of five individual and separate tanks held in a unit frame. Each tank is equipped with an inlet for charging, and a measuring pump for discharging its contents. The pump is fitted with a lock handle; all the moving parts are inclosed.

Volkmar Spring Engine Starter

A recent addition to the line of spring-operated self-starters is the type shown in Figs. 5 to 7, which is made by the Volkmar Auto Starter Company, 203 Broadway, New York City. The appearance of the starter on the car is shown in Fig. 6, where it is contained in a brass cover which is arranged over the mechanism. The latter consists of a shaft coupled to the crankshaft, a set of gears connected to the latter and a clutch arrangement by means of which the gearset may be engaged with or disengaged from a sleeve turning on the shaft and independently of same. Fig. 5 illustrates the starter with the cover removed. The shaft S is coupled at one end to the crankshaft, while the other end carries a slidable dog-clutch member D normally out of engagement with a member D1 adapted to engage it. The dog D1 is keyed to a shaft carrying the gear 1, so that if D and D1 are engaged and driven by the engine the drive is transmitted through the gears 1, 2, 3, 4, 5, 6. The last-mentioned gear, 6, has an extension in the interior portion of the starter and there meshes with a gear on the sleeve to which one end of the starter spring is fixed, while its other end is attached to the starter housing. The spring is 12 feet long and 2 inches wide; as soon as it is wound tightly, being held so by a pawl and ratchet arrangement, the dogs D and D1 are disengaged by

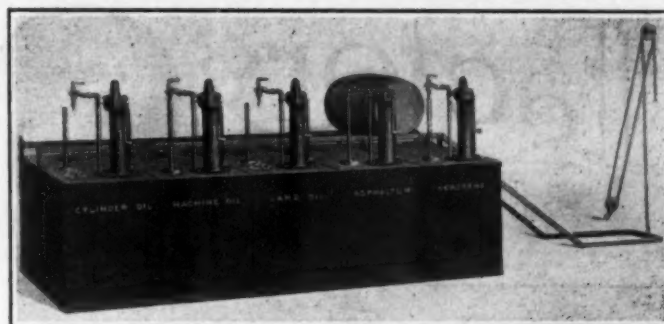


Fig. 4—Monitor multiple oil storage and pumping equipment

a Geneva gear C, which is shown in detail in Fig. 7. The end of the sliding dog D contained in the starter housing is fitted with another clutch face adapted to engage a similar member of the face of the spring sleeve or arbor. The Geneva gear, by means of which the dog D may be shifted either way, is connected by means P to a pedal on the dash, with the adjustment A so arranged that the gear G holds the dog D in neutral by a suitable position of the lever L. When the pedal is pressed down by the driver, the upper end of the lever L is forced forward (to the right in the figure), the lower end of the lever being drawn back by the spring S1. This throws the invisible end of the dog D into mesh with the clutch member on the spring sleeve, releasing at the same time the pawl from the ratchet, and causes the crankshaft extension, to which the dog D is keyed, to be rotated from six to twelve times at high speed. When the entire power stored in the spring is exhausted and the engine has started, the Geneva gear automatically shifts the dogs D and D1 into mesh, so that the rotation of the engine again winds the starter spring, whereafter the dog D is automatically shifted to neutral. Should the engine refuse to start in response to the action of the starter, because of some defect of ignition or carburetion system, the next thing to do is to eliminate the disturbing condition and then wind the spring by means of the crank W, Fig. 5, which is adapted to engage the inner face of the gear 1. The starter is then cranked, that is, the spring is wound about 20 revolutions. In this operation, there is no danger to the person operating the starter as the latter and the motor are not operatively connected while the cranking is being done.

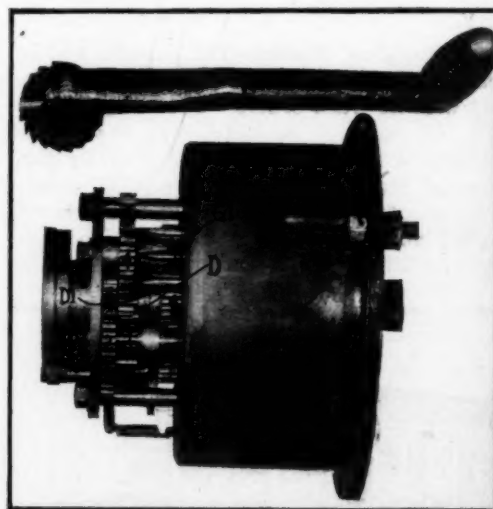


Fig. 5—Mechanism of the Volkmar starter with brass cover removed. Gearset 1, 2, 3, 4, 5, 6 serves to wind the starter spring inside the housing; dogs D, D1, engaging when pedal is pressed to start motor; Geneva gear G regulates relation of dogs; S, motor shaft



Fig. 6—Front view of Volkmar spring starter in place on a car

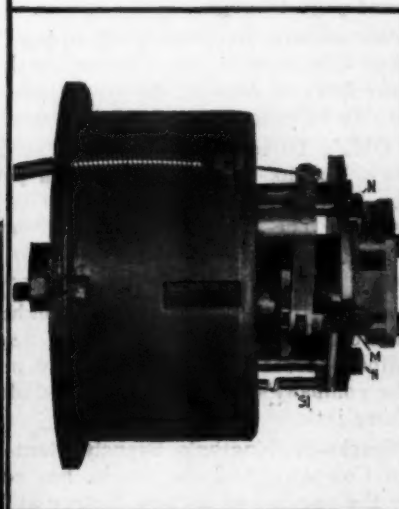
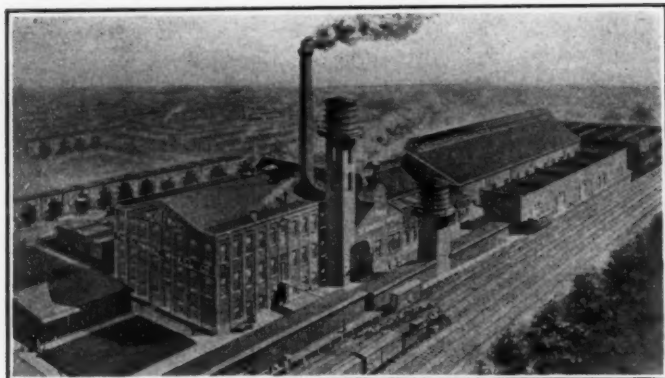


Fig. 7—Pedal side of the Volkmar starter. The spring tension is released by pressing P forward by the pedal on the floorboard, pushing the lower end of L toward the left and coupling sleeve and shaft S

Factory Miscellany



Plant of the Schwartz Wheel Co. at Philadelphia

MOSLER Factory Leaves Manhattan—A. R. Mosler & Company have removed from 163 West Twenty-ninth street, New York City, to their new factory building on the Bronx River, near the Wakefield station of the New York Central Railroad's Harlem division. The factory site measures 2 acres and the two-story building covers an area 100 by 200 feet. The factory is up-to-date in points of power, light and heating equipment.

Martin May Erect a Plant—C. H. Martin, Indianapolis, Ind., inventor and patentee of a tractor, intends to open an automobile factory in Indianapolis, Ind.

Ludlow Gets Tire Factory—The Stens Manufacturing Company will build a new tire manufacturing plant in Ludlow, Mass. M. T. Kane is in charge of the details.

Automobile Factory for Burlington—Burlington, N. J., is to have an automobile factory soon, if the plans of the Mount Holly Automobile Company to buy the old Alcott foundry go through.

Wetaskiwin Automobile Company Working—The Vulcan Auto Corporation, Wetaskiwin, Sask., Can., has started a large force of men on the excavation work for the new factory to be erected by the company.

Ohio's Three-Story Factory—The Ohio Electric Car Company, Toledo, O., has taken out a permit for the construction of a new three-story addition to its factory on Aurora avenue. The structure will be of brick and concrete construction and cover an area 101 by 61 feet.

Duff Builds New Jack Factory—The Duff Manufacturing Company, Pittsburgh, Pa., has bought 5 acres of ground on Preble avenue, where it will soon begin to construct a new factory devoted exclusively to the making of lifting jacks. The company's product is known under the name of Barrett lifting jack.

Sparks-Withington's Branch Plant—The Sparks-Withington Company, Jackson, Mich., has completed arrangements for the opening of its new factory at Walkerville, Ont. The plant is to take care of the growing Canadian business of the company, which is well known as a maker of fans and other automobile parts.

Swinehart May Build New Plant—The Swinehart Tire & Rubber Company, Akron, O., is considering the construction of a new factory building for the making of its products.

The expansion is necessitated by the increase of the company's business, and already a 90-day option has been taken on a 12-acre factory site in East Akron, O.

Webb to Move East—The Webb Motor Fire Apparatus Company, St. Louis, Mo., will move to Newark, N. J., in the coming fall. The company made 100 pieces of self-propelled fire apparatus during 1911, and now is doing business at a still greater rate. Milton A. Strauss, formerly with the Moon Motor Car Company, has been appointed sales manager of the Webb company.

Long Expands Its Activities—The Long Manufacturing Company, Detroit, Mich., which recently sold its factory to the Cadillac Motor Car Company, is moving to larger quarters on the East Grand Boulevard, between Cameron and Russell streets. The company, which makes radiators for all types of automobiles, has had the new building constructed of reinforced concrete and has equipped it in an up-to-date way.

Design New Electric Truck—Charles Van Auken and George Jacobs, Pontiac, Mich., after having completed exhaustive tests with an electric commercial automobile of their design, announce that it will soon be manufactured and placed on the market. The truck will be able to transport a load equal to 70 per cent. of its weight. While the inventors will first offer their truck to Pontiac capital, they will go to Detroit or Chicago if their first efforts prove futile.

Columbus, Ind., May Get Factory—An effort is being made to install a motor cylinder factory in Columbus, Ind., using for the purpose the buildings of the defunct Janney Manufacturing Company. The new company is to be known as the Caldwell Auto Parts Company and to be launched by J. I. Handley, president of the American Motors Company and Marion Motor Car Company, Indianapolis; Fletcher Goodwill, Detroit; S. H. Penfield and Benjamin Dean, both of Jamestown, N. Y.

Beaverstown Busy Building Trucks—The Kearns Motor Car Company, Beaverstown, Pa., is working at its maximum capacity to keep up with its truck orders. The company has on hand orders for 100 trucks to be shipped to New York and another big shipment to the tropics. Only during the past week a number of trucks have been sent to Uruguay, South America. As a consequence of the large amount of business the company now considers the construction of a new concrete factory building.



New factory of A. R. Mosler and Co., near Wakefield, N. Y.